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ORIGINAL ARTICLES.

VERTEBRAL SURGERY WITH REPORT OF THREE CASES, AND A NEW METHOD OF OPERATING IN THE DORSAL REGION.

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Operations upon the spine are called for in cases of: 1. Traumatism; 2, Neoplasms; 3, Caries. It is my desire to occupy a few moments of your time by briefly reporting three cases of the third class, and giving the result of operations upon the cadaver, done with a view of ascertaining how to attack the diseased bodies of the vertebræ with the least degree of danger to, or disturbance of, the spinal cord in the dorsal region. Among the most troublesome cases the surgeon has to contend with, we may safely place caries of the vertebræ, and especially the tubercular variety. During the past two years it has fallen to my lot to treat a number of these, three of which I will report at the present time as germane to the topic, viz.: "Operations upon the spine for caries of the bodies of the vertebræ."

History. Case 1.—Miss C. J., aged 29 years. Admitted into Wesley Hospital, Nov. 13, 1889; well nourished. Three years ago was treated for rheumatic fever. Has had pain in her back over lower dorsal region from that time to the present. Has always had a weak back. Two months ago the pain began to grow worse. Three weeks later she noticed a slight swelling behind the pelvis under the crest of the ilium.

Examination.—There is a large swelling on the gluteal (right) region, hemispherical in form, about 5½ inches in diameter at its base. There is also another swelling of considerable size in the right iliac region. Upon palpation fluctuation is elicited in both tumors and a communicating wave can be distinctly felt projected from one tumor into the other over the crest of the ilium. She cannot sit erect. When she makes the effort it gives her great pain in the back. Pressure upon the spinous processes of the tenth and eleventh vertebræ (dorsal) makes her complain of great suffering in the corresponding portion of the spine. Feels most comfortable with her body bent forward and thighs placed upon the trunk. She occasionally has pain in the course of distribution of the branches of the anterior crural nerve. Can not walk without support, and then with great effort of will. Temperature 100° F., pulse, 84.

Diagnosis.—Caries of the body of the 10th or 11th dorsal vertebra, or both, with psoas abscess.

Treatment.—With antiseptic precautions I aspirated the gluteal abscess, in the presence of Drs. McNamara and Lorman, withdrawing fully a quart of tubercular fluid and immediately injected a preparation of iodoform with glycerine and alcohol, and closed the wound with sublimated gauze, sealed with collodion. For about one week she was much relieved of pain, but the abscess cavity gradually filled up and her temperature varied from 99° to 102½° F., until December 27, when she seemed to be in a worse condition than when she entered the hospital. I now decided to drain the cavities, and if possible, attack the seat of disease. Made one incision above the crest of the ilium, over the interval between the latissimus dorsi and the external oblique muscles, the point through which the two abscess tumors communicated. There was a discharge of about a quart of tubercular fluid. Carried finger down into the pelvic abscess cavity; found it extended to the crural arch. Curetted and washed it out with bichloride solution; treated gluteal abscess in the same manner and inserted drains. Next carried a curved uterine dressing forceps through the sinus behind psoas muscle to upper border of the first lumbar vertebra, cut down through the muscles at this point and carried a tube through from crest of ilium to the last rib; next enlarged opening under the last rib, and carried probe up in front of the transverse processes to the body of the tenth dorsal vertebra, and here struck dead bone, which I partially curetted with a small bent instrument, similar to Simms' uterine curette. It was, however, impossible to curette thoroughly, owing to the interference of the transverse processes. I succeeded in carrying a drainage tube into the body of the bone between the transverse process-

es of tenth and eleventh vertebræ, through which the pus discharged freely. In 24 hours temperature was 104°; in 36 hours, 98½°. From December 27 to March 4, temperature fluctuated between 98½° and 100°, averaging about 99½°. April 5 placed her in a Sayre jacket, which she wore four weeks, and during this time she walked about the hospital with ease. Temperature averaged 99°. June 8 renewed Sayre jacket. June 17 manifested lung symptoms, advised her to go into the country, hoping a change of air would do her good. Temperature 100°. The sinuses were all healed in two months after the operation, excepting the one going directly into the body of the tenth vertebra, which still discharged a little pus at times. Six months after her departure from the hospital she died of tuberculosis of the lungs. This patient was very comfortable for four months, from January 10 to June 1; almost entirely free from pain, and had perfect use of her limbs.

History. Case 2.—Miss H. W., aged 21 years. Entered Wesley Hospital March 26, 1890; considerably emaciated. Mother and father in good health. Sister died of consumption at the age of 22 years. About one year ago our patient began to feel pain in the back of her neck upon rising from bed, which became more and more severe, and in about two months' time extended to the left arm, which was soon paralyzed. She lost entire use of the arm. After another two months the arm began to improve, but her neck grew worse, and for one month she lost her voice, which, however, came back suddenly. Then her face began to swell and teeth decayed rapidly. Soon after restoration of voice she noticed a swelling in the left sub-occipital triangle, which constantly increased in size until it had filled the entire posterior triangle. All this time patient suffered excruciating pain, day and night, at the back of head and neck; also over left shoulder, left arm and ulnar side of corresponding hand. She also experienced difficulty in swallowing. I found a large, hard tumor situated at about the middle portion of the left side of the neck pressing the sterno-mastoid muscle outwards and forwards. The common, internal and external carotid arteries appeared to be pressed forwards in front of the tumor. The neck was slightly flexed to opposite side. With index finger inserted through the mouth, a convex projecting tumor could be felt encroaching upon the lumen of the left half of the pharynx. Retaining finger in pharynx and placing the other hand over the outside of the tumor in the neck I could feel that the pharyngeal growth corresponded to the cervical. No fluctuation. The tumor seemed as dense as bone, and as large as a medium sized orange. It was variously diagnosticated by different physicians. One called it a cancer; another fibroma. I concluded that it was either an osteo-sarcoma or abscess from caries of a cervical vertebræ. The extreme hardness being the only doubtful feature with reference to the latter. March 31 I concluded to operate, with the assistance of Drs. Danforth and Greene. Made a large incision behind the sterno-mastoid muscle, avoiding the branches of the cervical plexus, which were carefully drawn aside as the dissection progressed. Immediately after cutting through the deep layer of the cervical fascia fluctuation was apparent. I opened the wall of the abscess. There was a tremendous gush of blood, which was soon followed by cheesy matter. The blood, however, continued to well up at a great rate. I quickly dipped my finger into the cavity and found very large excavation in the body of the 4th cervical vertebra, in fact, there seemed very little left of the bone. Curetted the walls of the cavity and stopped hæmorrhage by packing the hole with strips of iodoform gauze, and placed patient on her back without pillow for head. On the third day took out packing and inserted drainage tube. She could not hold her head up, as the supports were gone. Her neck felt as if it was broken. Kept her bed about two weeks. The wound discharged a little four weeks. After the second week adjusted a jury mast to her head and back, which permitted her to walk about. All pains were gone excepting a local tenderness of the spine. Twenty-four hours after operation temperature ran up to 101°. It was normal four-fifths of the time from day of operation until her discharge, May 15, 1890. Three months ago her mother wrote me that her daughter had laid aside her jury mast, could hold her head erect, and was engaged about the house doing housework; was feeling well.

Case 3.—Mr. H., aged 35 years; horse-shoer. Admitted in Wesley Hospital January 28, 1891; American. Patient had inflammatory rheumatism when a child. Some years ago had typhoid fever. Has been quite well for many years preceding the present illness. One year ago last October he was bruised in the back by a refractory horse, has had slight backache ever since, in the sacral region. Last March he began having pain in the left hip and was treated for three or four months for sciatic rheumatism. In September a swelling on the hip was noticed and his doctor cut down upon it, finding tubercular fluid. There have been several attempts to find the origin of the discharge, none of which have been successful.

Examination.—Patient is quite emaciated, but says he has a good appetite. There are several large scars on his hip from previous incisions. There is also a triangular opening on the gluteal region, high up over the back of the ilium, which communicates by a sinus six inches long with one over the trochanter major. There is a free dis-

charge of pus from both of these wounds. Lungs in good condition. Bowels loose. He is too weak to sit up. Pulse 113. Temperature 101½°. Exploration of wounds reveals necrosis of trochanter major on its posterior border; quite an excavation exists here. Several sinuses are present, one extends directly through the thigh to its inner border behind adductor muscles, a second sinus leads up to the back of the ilium, and a third one communicates with the pelvic cavity. I passed a flexible uterine sound into the latter opening behind the tuberosity of the ilium, back of the rectum to the anterior surface of the sacrum, a distance of nine inches. The probe struck denuded bone on the anterior surface of the body of second sacral vertebra towards left side. The patient complained of great pain over the sacrum. His legs were strongly flexed. The psoas muscle of the diseased side was contractured.

Diagnosis.—Caries of the sacral body with secondary infection of trochanter. February 9, with assistance of Drs. Danforth, Sage and Miller I concluded to scrape the dead bone and drain the parts diseased. First cut down on trochanter and chiseled away the diseased tissue. Next made a vertical incision one and a half inches to the left of the spinous processes of the last lumbar vertebra, extended this incision into the back of the sacrum. This cut led me into the triangular space below the transverse process of the last lumbar vertebra, bounded below by the body of the sacrum, at its outer side by lumbo-sacral ligament, limited internally by the body of the last lumbar vertebra. Through this opening (two inches deep) I passed my finger and hooked it over the anterior surface of the sacrum into the pelvic cavity. With a bent probe reached the diseased bone, then introduced a bent curette with flexible handle and curetted as well as possible the sacral segment, which was necrosed, also lightly scraped the long sinus from below, and finding it impossible to carry a tube from the lower opening at the trochanter through pelvic cavity to the upper opening at the top of the pelvis, distance of ten inches, I concluded to make a sally by way of the great sciatic notch, half way between the two openings. I therefore cut through the gluteus maximus muscle to the upper border of the notch, and thrust a uterine sound, bent into a half circle, through this opening over the front of the sacrum and the promontory into the upper opening. As this opening was two inches deep, it was not possible to bring the sound to the surface, but, with the assistance of Dr. Danforth, a silk thread was fastened below the bulb of the sound and carried through the pelvis; a drainage tube was now attached to the lower end of the thread and drawn through, giving an excellent drain to the diseased bone. Another drainage tube was carried through the thigh transversely behind trochanter and adductor muscles, and a third drain inserted for the trochanteric cavity. Twenty-four hours after operation his temperature was 99°. It fluctuated between normal and 102°, averaging about 99½°, until the day of his discharge, March 4, when it was normal. About ten days ago I received information that he was able to sit up, and the wounds were almost healed. There was still a little discharge from the trochanteric wound. In this case we examined the discharge at the hospital and found bacilli. The operation was undertaken with the hope of relieving, to some extent, the sufferings of our bed-ridden patient, and he certainly has been more comfortable since the operation, although ultimately I fear he will die of tuberculosis of the lungs.

The wounds in all cases were washed daily with bichloride, 1–5000, and sterilized water.

Spinal surgery has assumed an extraordinary degree of importance since the year 1887, following the report of Horsley's first operation for neoplasm, and since then a number of operations have been done for caries and traumatism. I hold that the necrosed bone of the spinal column should be treated upon the same principles as similar disease in other bones. In other words, when we are certain that suppuration exists, we ought to endeavor, if possible (providing that systemic conditions or other complications do not contra-indicate), to reach the seat of disease, remove all that we can of the dead tissue, and establish thorough drainage, for we know that a long continued suppuration with accompanying infiltrations of pathogenic fluid must soon undermine the vitality of our patient, and the paralysis accompanying many cases must be attributed to the inflammatory and suppurative processes, causing pressure upon the cord, rather than to the disease of the cord itself. (See paper of Dr. Geo. E. Elliot, *N. Y. Medical Journal*, June 2, 1888.) Grave as this operation ever must be, the experience of Drs. Morenan, Horsley, Albe, Lane, Duncan and White (*Annals of Surgery*, July, 1889), it seems to me, fully justify the procedure. These operators had ten cases of laminectomy (for caries) of the gravest kind. They report three recovered, four improved. One of complete paralysis of all four limbs recovered. One with incontinence of urine and fæces, with complete sensory and motor paralysis, was also cured; a third one with paralysis of lower extremities recovered perfect motion of both legs. In two of these we are told that the laminæ and spinous processes of the three successive vertebræ were excised—a most formidable operation. In view of these facts it appears to me that the old method of opening a psoas abscess a foot or more from the point of disease without attacking its *fons at origo* is unphilosophical, irrational and decidedly unsurgical. In cutting down up-

on the diseased body of a vertebra it would seem extremely desirable to avoid opening the spinal canal, to prevent injury to the cord, to avoid hæmorrhage into the canal, or even infiltration of septic matter, and this should be done before paralysis occurs, if possible, or at least as soon as an abscess appears with pressure symptoms. Such operative procedure is, however, not simple, as any surgeon who has made the attempt will attest, especially in the dorsal region. Laminectomy at this time of course defeats the object sought. With a view of ascertaining how to accomplish this most effectively and directly, I instituted a series of experiments upon the cadaver. In the cervical region it can usually be accomplished most readily by following up the sinus of the abscess cavity, or as has been done in the upper region of the pharynx, *via* mouth. In the lumbar region an incision over transverse processes through the superficial tissues and along the border of the multifidus spinæ muscles, 1¼ inches from the spinous processes, enables one to get behind the psoas muscle (as in case 1, reported), to the vertebral body. The sacral body can be reached as in case 3, *via* the triangle between the transverse process of the fifth lumbar vertebra and the base of the sacrum, also through the great sciatic notch; through or back of the rectum, or by trephining through the bone from behind. In the dorsal region between the transverse processes, but the space here is so narrow as to preclude the possibility of thorough treatment; I therefore incised the soft tissues, one inch from the spinous processes, uncovered and removed the transverse process of the diseased bone, or of the one just below it, and resected the head and neck of the corresponding rib. This permits a large finger to reach the postero-lateral angle of the diseased body, and gives room for the introduction of the curette, sharp spoon or forceps, and leaves a large space for drainage tube. Should it be desirable to carry the drainage tube through the column, a transverse process with end of the rib of the opposite side can also be removed, when it can readily be passed through. In doing this operation we must avoid the pleura, dorsal ganglia of the sympathetic, spinal nerves, and intercostal arteries. One can hardly avoid injuring the artery. The other tissues need not be damaged. Hæmorrhage can be controlled. The difficult part of the operation is in disarticulating the head of the rib, as it is deeply placed and firmly attached. To avoid injuring the pleura and the ganglia of the sympathetic, it is a good plan after sawing through (chiseling or cutting with bone forceps), the rib at its tuberosity, to strip off the periosteum in front of the neck and head of the rib. The transverse process I remove with chisel. The disarticulation of the rib can be done with scissors or knife, by following the attachments of the ligaments about the neck and head of the rib. The operation is practicable, less formidable than laminectomy; the latter operation involves more cutting. The spinal supports are not so much weakened, and the spinal canal not opened, unless the back portion of the vertebral body is destroyed. Even then the posterior common ligament may protect the canal. Of course it is to be understood that the operation is not intended to take the place of laminectomy in cases of great angular curvature, but to be resorted to before the disease has produced any great deformity, as soon as an abscess has been discovered.

COMPLICATIONS DURING AND FOLLOWING ABDOMINAL OPERATIONS.

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Abdominal and pelvic surgery to-day is practiced by as restless and ambitious a throng as ever fought for fame upon the battlefield. There is probably not a State in the Union which cannot produce at least one man from each county, who has made one or more abdominal sections in the past few years. In many instances the welfare of the patient is only a secondary consideration to them. The prevalence of the mistaken idea that intra-abdominal and pelvic surgery is an exceedingly easy procedure, and the desire for local fame is what induces the large per cent. of these men to undertake the work. But after they have had a few deaths on account of unlooked-for complications, they have learned that opening the abdomen and making the necessary operations is not always easy, as has been so frequently stated by abdominal surgeons. Not a few of these men, to my knowledge, have very wisely said, no more abdominal surgery for them. It is easy in many cases, after special training in all of the technique of abdominal and pelvic surgery, but most difficult without this.

These are trying times for men engaged in this special work. They have their position to sustain and their advancement to make against the many difficulties incident to the work, as well as against the failures of those who insist upon opening the abdomen because it is easy. We all know an uncomplicated ovariotomy is one of the easiest of the capital operations; yet we must admit that it is a serious one, to be carefully performed after careful consideration. We are to remember, that very frequently that which appeared to be a simple and easy operation, may, and not infrequently does, terminate in the most complicated condition, and the complications must be carefully overcome if we hope or expect to save the life of the patient. The removal of the tumor in many instances is the least part of the operation; and in these complications arising after the

operation, is where the man who has had ample training will save the life of the patient, while one who sees the complications for the first time, will probably have a death follow. The careful attention to every minute detail which alone can bring success to the operation, is only attained by long and careful training; that training which is obtained by an apprenticeship for many months with different operators; without which no man should undertake abdominal and pelvic surgery with the mistaken idea that it is an easy operation, and one devoid of serious risk. So long as the craze "to open the abdomen because it is easy" exists, the end must be disappointment to the operator and complaint by the profession. The sooner the men engaged in this special work come to the front with a report of their complicated cases, illustrating complications during the operation, and those immediately following it, and show that no man can be at all certain as to the gravity and extent of the complications to be met with in any given case, or what complications may follow the operation, the better for humanity and the profession at large. No man has a moral or legal right to open a patient's abdomen unless he is prepared for any emergency which might occur, and is himself competent to deal with the conditions found, on the spur of the moment and in a surgical manner; unless the exigencies of the case are such that the patient would be in greater danger from a few hours' delay than is ordinarily encountered from the inexperienced operator. A knowledge of the accidents that may happen is one of the best means of avoiding them, and this knowledge can only be attained by an apprenticeship extending over a long period of time, or at a great sacrifice to human life, if the work is prosecuted without preliminary training. It is now conceded by all that the success following pelvic and abdominal operations are measured by the ability of the operator to overcome the many complications met with in each individual case. It is also conceded that in the most carefully performed operations by the most experienced operator, there not infrequently arises at the time of the operation, or within a few hours or days, complications of the most grave character, which menace the life of the patient and not infrequently cause their death. When these complications come to the inexperienced, the patient is usually lost. The accidents and complications must, of course, vary according to the organ dealt with, or the nature of the operation. Frequently the abdominal cavity is opened with a view of making a diagnosis, and doing upon the spur of the moment that which is there revealed. We may have some idea of what we may encounter, yet we are frequently treated to extraordinary surprises; as illustrated in a case which I operated upon in September, 1889, in which an exploration was made to clear up the diagnosis in an obscure kidney case in which the symptoms of stone were not well defined, and upon exploration there was found an irregular shaped stone impacted in the ureter some three inches below the kidney, which was removed by a second incision in the loin, after overcoming many unlooked-for difficulties; yet the patient recovered. Some of the gravest complications during the operation are caused by separating adhesions. In any of these cases we may have hæmorrhage or intestinal rupture, or both. They are the most frequent in long-standing pelvic inflammations of gonorrhœal origin. In some of these cases the tissues are so friable that it is impossible to apply a ligature in the ordinary way, and the vessels must be ligated separately; or what is still more difficult, and which must be done in some cases, is to cobble stitch the broad ligament, a procedure that I have been compelled to do in three different cases before the hæmorrhage could be controlled, without which the patient would have died on the table. In two of these cases the tube and ovary came away when an attempt was made to bring the specimen up to the incision preparatory to passing the ligature; in the other case, when the ligature was tightened, it cut its way through the tissue; in all of these cases the hæmorrhage was frightful. In each of them the incision was at once enlarged, the patient's hips elevated, hæmorrhage temporarily controlled by pressure of forceps, after which the entire broad ligament was stitched through, controlling the hæmorrhage, and the patients recovered. In many of these cases the intestine is denuded of peritoneum at the point where the adhesions were separated. If we carefully place a few stitches and strengthen these weak points—a procedure I invariably adopt in all deep lacerations—we will save not a few lives which would otherwise be lost. In some of these cases we will have intestinal rupture after the most carefully performed operations, which must be repaired at once. This accident I have had twice in the past year; one, with a rent an inch long, recovered without fæcal or other fistula; the other had a fæcal fistula for fourteen days, but the patient recovered. In the first case the bowel could be brought into the wound and repaired, which was done. In the second this could not be accomplished; therefore the edges of the rent could not be so accurately coapted deep down in the pelvis, and the result was not so satisfactory. Complications arising after operations must be dealt with in the same concise, determined manner as those encountered during the operation, if we expect to save our patient. The following case illustrates what can be done in the presence of grave complications by prompt interference: The patient was operated upon in December last for gonorrhœal pus tubes. Everything went well until the morning

of the fourth day. The drainage tube was out, bowels had been thoroughly moved, and I began to congratulate myself upon having an easy convalescence after such a dirty pus operation. The morning of the fourth day, however, the patient complained of pain in the left half of the pelvis. The pain grew gradually worse during the day; she developed some fever in the evening, and spent a restless night. At six A.M. the following morning, temperature 101, pulse 120, with a circumscribed painful point in the region of the left stump, of a throbbing, burning character. She grew rapidly worse until the evening of the sixth day after the operation, at which time she had a pulse 150, temperature 104.5. All day the patient had been restless, and at times quite delirious. Everything in the shape of drugs which promised anything had been tried without avail. She had no chill or sweats, yet I felt certain that she had an accumulation of pus in the left side of the pelvis, and decided to reopen and drain the abdomen. Without the use of an anæsthetic, I removed a few stitches at the lower end of the incision, tore the wound open, and introduced the finger into the cavity, and broke up adhesions until I found the left pedicle; upon withdrawing the finger, an ounce or two of pus was discharged. I introduced a piece of gauze, and applied a gauze and cotton dressing. The patient slept well during the night; was awake but twice for a short time. She made a rapid recovery. The temperature was never up to 101 after that time. She went home on the twenty-sixth day. I am certain this patient would have died in a few hours if the pus had not been evacuated. It is such a serious thing to reopen the abdomen after operations that no one feels like doing so as long as the patient has any chance of recovery without it. For this reason we may delay, between hope on one hand and dread on the other, until the patient has practically no chance at all on account of the delay before we fully make up our minds to reopen. The danger of delay, where it is necessary to reopen, is very forcibly illustrated by the result in the following case, operated upon in June, 1890, for sarcoma of the ovary, weighing four pounds. The pedicle was a thick, short one, and was ligated with difficulty. Patient did well until the third day, when, after giving a physic, she developed symptoms of intestinal obstruction, which grew worse every hour. It was thirty-six hours later before I gave up hope of overcoming the obstruction with salines and enemas. But by that time the patient was very much exhausted, yet, after a consultation with my friends, Drs. Reed and Ricketts, it was agreed that the only chance for recovery was to reopen the abdomen and relieve the obstruction. She was put upon the table under ether, a few stitches removed, and two fingers introduced into the cavity, which were carried at once to the pedicle, and the obstruction found to be due to a coil of intestine adherent to the stump in such a manner as to cause complete obstruction when it was distended by gas. The intestine was separated without difficulty; the whole operation did not require fifteen minutes' time, and the patient's bowels moved before she could be placed in bed, yet she died three hours afterward from the shock. The case was lost because I did not have the courage of my convictions, to reopen the abdomen as soon as the diagnosis of obstruction was made, which was twenty-four hours before the cavity was opened.

The cases narrated in this paper are by no means all of those in which I have had complications, but selected to illustrate, in a measure, what every man will sooner or later encounter if he makes many abdominal operations. It is not necessary to relate more cases to show that abdominal operations are not always easy, and to illustrate complications which will certainly greatly embarrass the inexperienced operator. And when the complications occur, and they are not prepared to meet the emergency, the patient pays all too dearly for their inexperience by the forfeit of her life.

NEW METHOD OF INFLATING (CATHETERIZING) THE MIDDLE EAR.

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The great importance of diseases of the middle ear, the serious and sometimes fatal consequences attending this class of cases, and the difficulty in applying therapeutic aid to an organ so deeply situated, are facts which are recognized by all enlightened medical men at the present day. In the therapeusis, as well as the diagnosis, of inflammations of the tympanic chamber, inflation occupies a prominent position. By inflation is meant the process by which air is driven through the Eustachian tube into the tympanum. There are various methods of accomplishing this result. Before proceeding further, I would ask your attention to a few historical facts.

HISTORY OF MIDDLE EAR INFLATION.

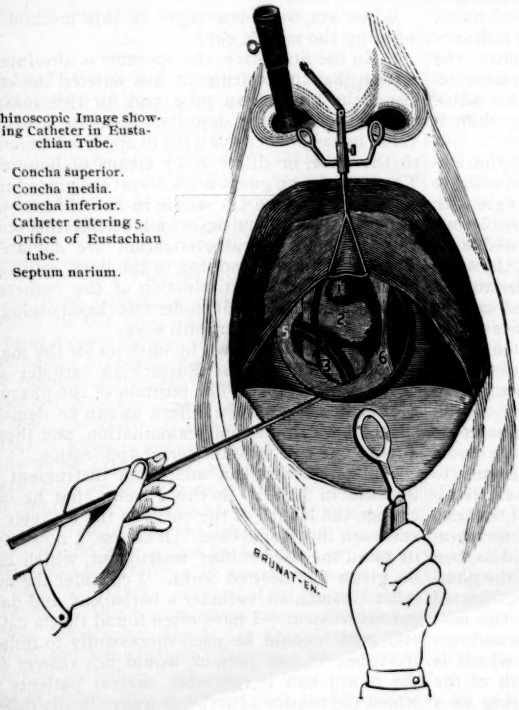
The Eustachian tube was first accurately described by Bartholomew Eustachius, professor of anatomy at Rome. He died in 1574, leaving posterity a series of splendid copper-plate engravings designed to illustrate the anatomy of the human body. These were his own handiwork, and, as time willed, were lost sight of for nearly a century and a half. When discovered, the Eustachian plates were presented by Pope Clement XI to his physician, Lancisi, who published them at Rome in 1714. In the work of Eusta-

chius the intrinsic muscles of the ear were first described.[1]

Ten years before the publication of the book of Eustachius, Valsalva, as the best method for removing pus from the ear, recommended forcing air through the Eustachian tube, with the mouth and nose closed. This method is known as the "Valsalvan experiment."

Catheterism of the tube was first employed by Guyot, a postmaster of Versailles, who claimed to have cured an impairment of his own hearing by this means. Guyot introduced an instrument through the mouth, and probably reached the vicinity of the tube.[2] To him belongs the credit of originating the idea, while the merit of its practical employment belongs to Archibald Cleland, an English surgeon, who, in 1750, injected air and fluids through a silver probe-shaped tube, inserted through the nose.

In recent years Adam Politzer, of Vienna, has described the method of inflation which bears his name. Other methods have been described by Lucæ and Gruber.



Rhinoscopic Image showing Catheter in Eustachian Tube.

1. Concha superior.
2. Concha media.
3. Concha inferior.
4. Catheter entering 5.
5. Orifice of Eustachian tube.
6. Septum narium.

MODUS OPERANDI OF THE NEW METHOD.

It is my purpose, in this brief paper, to call attention to a method of using the Eustachian catheter which has given me most excellent results, and which, so far as my knowledge extends, has previously not been described. In order to avoid any possible controversy regarding priority in the use of the method to be described, I will here state that the idea was an original one to me, and that I have used the procedure almost daily for the past fourteen months. My method is based upon a new application of principles already known, and the use of instruments which already exist. In order to avoid any mistake, it may be well to repeat here, what is already implied by the title of this paper, that the procedure about to be described is an improved method of catheterization of the Eustachian tube. By the methods heretofore employed, the operator trusted entirely to the sense of touch to guide the catheter into position. By the method which I shall describe, *the operator can see*, as well as feel, *the instrument enter the orifice of the Eustachian tube.*

The method is as follows: The patient's nose is first sprayed with a cleansing solution, to remove all débris. A solution of cocaine is then sprayed over the lower nasal mucous membrane until anæsthesia is produced. The patient is then told to clear his throat of any mucus that may have accumulated. He is then given a rectangular tongue depressor, and told to hold it firmly in place, taking care not to push it backward so far as to cause retching. Artificial light is then to be concentrated upon the patient's mouth by a forehead mirror and White's palate retractor, which is self-retaining, is applied. The soft palate is drawn forward with considerable firmness, and held in this position by means of a set-screw with which the instrument is provided. A hard-rubber Eustachian catheter is then passed into the nose on the side corresponding to the tube to be inflated, and allowed to remain. The next step is to take a rhinoscopic mirror in the left hand, warm it over the lamp or gas, and pass it into the upper pharynx behind the velum. It is at this point that the value of the palate retractor becomes apparent. It draws the palate forward and gives the operator

[1] Lancisi: Tabulæ Anatomicæ Clarissimi viri Bartholomæi Eustachii. Amstelædami, MDCCXXII. Tab. xli, Fig. ix, x.
[2] Gruber: Diseases of the Ear, N. Y., 1891.

sufficient room in which to manipulate the mirror, which brings into view all the landmarks in this region—the septum, the choanæ, the superior, middle and inferior turbinated bodies, the fossa of Rosenmüller, and *the orifice of the Eustachian tube*. The last named is the objective point.

The mirror still being in the left hand, and the patient holding the tongue-depressor, the operator grasps the catheter between the thumb, index and middle fingers of the right hand, and passes the instrument directly into the orifice of the Eustachian tube. *Every step of the operation is visible in the rhinoscopic mirror.* The mirror is then quickly withdrawn, the hands are changed so that the catheter will be held by the left hand, while the inflation is completed by an ordinary air-bag held in the right palm. Finally, the catheter is withdrawn, the palate-retractor removed, and the operation is over. The whole manipulation can be done in less time than it takes to describe it.

To bring the pharyngeal openings of the Eustachian tubes well into view, it is advisable to use a mirror which is set at an obtuse angle with the stem, and to hold it as much as possible in a position facing the tubes. It is not possible, in all cases, to see all of the landmarks at the same time, consequently the mirror must be turned from side to side until the parts desired can be brought to view. The Eustachian orifice can be recognized as a pit, or depression, located external to the lower turbinated body. In the normal state, the mucous membrane at the entrance to the tube is paler than that in its vicinity, which is of a deep red color. As seen in the rhinoscopic mirror, the relation of the different parts is, of course altered, those situated behind seeming to be in front, and *vice versa*. Thus the cartilaginous prominence of the posterior wall of the tube seems to be in front, and the anterior membranous wall with the salpingo-palatine fold is seen behind. So, also, the long diameter of the pharyngeal opening of the tube is, in reality, directed downwards and backwards, though in the mirror its direction seems to be downwards and forwards. Rosenmüller's fossa, again, which is behind the protuberant lip of the mouth of the tube, seems to be in front of it, appearing as a curved dark space.

There are very few patients in whom, on account of the excitability of the pharyngeal muscles, it will be impossible to carry out this method of inflation at the first sitting. In such cases it is sometimes necessary to apply a swab, soaked with cocaine, to the faucial pillars. After two or three sittings, the mucous membrane becomes accustomed to the contact of instruments, and the treatment can be carried out. In a few rare cases of pharyngeal spasm it will be necessary to use considerable force in drawing the palate forward, but after two or three minutes the muscles give up the unequal contest and remain quiescent. The activity of the salivary and buccal glands, in pouring out an abundant thick secretion, may interfere with the view of the parts in the mirror. In such cases, either the operator should cleanse the throat with a swab of cotton held in an ordinary sponge-holder, or the patient should eject the saliva in the ordinary way. Most patients will have no trouble in clearing the throat, even when the palate retractor is in place.

ADVANTAGES OF THE WRITER'S METHOD OF INFLATION.

What are the advantages of this method of inflating the middle ear?

1. In the first place, the operator is absolutely certain that the instrument has entered the orifice of the Eustachian tube, and for this reason the method I have described is of the greatest value in cases where we wish to apply astringents to the tube, or dilate it by means of bougies.[3] There can be no guess-work about the procedure, since its whole field is visible in the rhinoscopic mirror. The difficulties which attend the ordinary methods of catheterization are obviated. There is no more prodding in the dark, and verbose rules for the introduction of the catheter, such as are found in all modern works on otology, are unnecessary. Turnbull says:

"The rules laid down by authors for the manner of introducing the Eustachian catheter are very unsatisfactory. The position of the pharyngeal orifice of the tube differs, as can be demonstrated by a rhinoscopic examination, and therefore no one rule is of universal application."[4]

2. The operator can adapt his instrument to the case in hand. By this I mean that he can change the length of the curve of the catheter to suit each individual case. Of course, I now have in mind the hard rubber instrument, which can be given any desired form. I consider the metallic Eustachian catheter a barbarous and dangerous weapon. I have often found that a catheter, which could be used successfully to inflate the tubes of one patient, would not answer for the next; and I remember several patients in whom the required curvature was radically different for the two sides of the same individual.

3. In using my method, there is no danger of emphysema. The danger of tearing the mucous membrane in the vicinity of the tube, and forcing air beneath it, is recognized by the standard authors of the day. At least three cases are on record of a fatal result following the use of the catheter. Hartmann, of Berlin, says: "Alarm-

[3] "Although the employment of bougies for dilating the tubes, to which the older aurists so frequently resorted, has almost been abandoned, they have recently been very highly recommended again by Urbantschitsch."—Hartmann, Diseases of the Ear, 1887.

[4] Turnbull: Clinical Manual of Diseases of the Ear, 1888.

ing and even dangerous accidents may be caused by the catheter injuring the mucous membrane and inflating the subjacent and surrounding tissues with air." It is a well known fact that the roof of the tympanum, while always thin, is often incomplete. Hyrtl has described this condition *in extenso*, and has called attention to the contiguity of the dura mater and the mucous lining of the tympanum at such points. Gruber, as long ago as 1864, stated that forced inflation of the middle ear, in the condition just named, may actually induce sub-meningeal emphysema. In the hands of a skilful operator, the method of inflation which I have described cannot be followed by any such disastrous consequences.

WHAT CAN BE DONE IN CEREBRAL SURGERY? REMARKS BASED CHIEFLY UPON PERSONAL EXPERIENCE IN TWENTY-THRE CASES.

Read before the Kansas City Academy of Medicine, November 28, 1891.

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To those unfamiliar with recent advances in surgery of the brain, my paper may be something of a surprise because of the radical changes which have occurred in this department of operative surgery within the past few years; in fact, I doubt not there are some who will contend that we are too aggressive—that we invade the cranium with too much impunity. But from a careful study of twenty-three cases upon which I have operated (a series of cases presenting two deaths and twenty-one recoveries), and a review of recent contributions to the literature of the subject, I firmly believe that we have not yet awakened to the possibilities in operative surgery of the nervous system. Bremer, of St. Louis, says:[1] "Owing to the comparative safety afforded by asepsis, many more skulls are opened than the state of our knowledge of the brain, its physiology and pathology, warrant." Perhaps in its broadest sense this is correct, but the opposite position is equally tenable; in proportion to our knowledge of localizing symptoms, *not enough* skulls are opened—in appropriate diseases.

For what can we operate?

1. Meningeal hæmorrhage.
2. Cerebral hæmorrhage.
3. Tumors of bones, meninges or brain.
4. Cerebral abscess or thrombosis of lateral sinus.
5. Cephalalgia.
6. Epilepsy.
7. Insanity.
8. Tuberculosis.
9. Microcephalus.

Operation for gunshot wounds, fractures, etc., is foreign to this paper, it belonging to accidental surgery.

MENINGEAL HÆMORRHAGE.

Of the practicability and necessity of operation for meningeal hæmorrhage there can be no question; since Macewen, in 1879, opened[29] the skull of a boy and removed 2 ozs. of fluid and coagulated blood from beneath the dura in the lower part of the Rolandic fissure, with recovery, cases have been too numerous, and results too satisfactory to admit of discussion. By the term meningeal hæmorrhage I include hæmorrhage between the bone and dura mater, and bleeding into the subdural or subarachnoidal space. Usually this condition is the result of injury, so there is no doubt as to the diagnosis in most cases—the injury being most frequently a rupture of the middle meningeal artery or its anterior branch. The symptoms may occur rapidly, but more often they appear gradually, the bleeding taking place slowly, and continuing until either tension or coagulation closes the vessels, or fatal compression is induced. In a typical case the patient is stunned for some time, but gradually regains consciousness. After an interval of from a half hour to a day or two, symptoms of compression make their appearance. In such cases trephining is always indicated. If one meets a case of non-traumatic origin, the diagnosis rests between meningeal hæmorrhage and embolic or thrombolic softening—a distinction not always possible to make. In such an instance, the patient should be given the benefit of the doubt.

When the intracranial hæmorrhage is due to injury, the external wound indicates the site for operative procedures. If there be no external guide, dependence must be had upon localizing signs, the broad rule being always borne in mind that for hæmorrhage from the anterior branch of the middle meningeal artery, the point of selection (unless very strongly contraindicated), is 1¼ inches behind the external angular process; while for the posterior branch, the point is a little below the parietal eminence. As soon as a diagnosis of meningeal hæmorrhage is established, the surgeon should open the cranium under strictest asepticism, remove the clot, thoroughly irrigate with water of a temperature of 110° F., put in a catgut drain, sew the dura with finest catgut sutures, and close the external wound with proper drainage, dressing as any other wound. The drainage tube may be removed on the second or third day. Small strips of iodoform gauze may be employed for drainage if so desired; they have given satisfaction in several of my cases.

The last operation for meningeal hæmorrhage in this city was by Dr. J. W. Perkins.[2] A boy

received a blow over the anterior branch of the middle meningeal artery. Evidences of compression, including hemiplegia, came on in due time. Four hours later Dr. Perkins trephined, and found a clot considerably larger than an English walnut; this was removed, the bleeding vessel attended to, the wound irrigated and closed. Recovery was uninterrupted and complete.

CEREBRAL HÆMORRHAGE.

Under the head of cerebral hæmorrhage I include bleeding into the substance of the brain, or into the cavity of the ventricles. Until within a very short time, these cases have been believed to be beyond the pale of surgical interference. Indeed, Horsley, one of the boldest of cerebral operators, as late as July, 1890, advises[3] tying the common carotid artery in every case of bad cerebral hæmorrhage seen within four hours after the attack; to the universal adoption of which I must protest, and I note that Krönlein, of Zurich, says[4] it must be restricted in its general applicability. Osler, of Baltimore, also condemns[5] any attempt at surgical correction of the trouble, except when of traumatic origin. In fact, the only authority (in the English language) that I can find encouraging operative measures, is Landon Carter Gray, of New York, who states:[6] "In cases (other than ganglionic) thus far reported, the lesion has been in the external capsule, between the lenticular nucleus and the cortex. Alcohol, insanity and trauma are etiologically related to cortical and dural hæmorrhages, while syphilis, chronic Bright's disease and cardiac hypertrophy affect principally the basal and cerebral vessels. As regards the type known as ingravescent or progressive apoplexy, the author rather inclines to the trephine as a means of possible relief. This must be done before the blood breaks into the ventricles. To reach a hæmorrhage in these cases the best place to trephine, as Dana suggests, would be a little below and in front of the parietal eminence. To reach the internal capsule in its anterior and middle parts, he recommends that a point be located halfway between the anterior and posterior ends of the corpus striatum and the optic thalamus respectively." Almost every work explicitly advises against operation. Thus Starr, of New York, says:[7] "It is in cortical or surface hæmorrhage only that operations can be done. If the clot be upon the external surface of the hemisphere, and produces symptoms of aphasia, hemiplegia or hemianopsia, it can be removed." The reason he assigns for objecting to operation in subcortical hæmorrhage is that "when a hæmorrhage has occurred within the hemisphere, lacerating the tracts and destroying tissue, operative interference is out of the question, for tissue once destroyed in the brain is not repaired by nature, and even were repair possible, the surgeon could not reach and remove the clot without producing a further laceration of important cerebral structures, or serious cerebral hæmorrhage." To this I must enter a demurrer. In the first place, in cerebral hæmorrhage, the tissues are often simply *pushed apart*, without serious laceration of the tracts or destruction of tissue (except by pressure necrosis), so if the clot be removed early, permanent injury may be prevented. In the second place, the surgeon *may* cut the white matter of the brain to a very considerable extent, without pronounced harm resulting. I have many times freely incised the brain tissue without serious consequences, and in gunshot and other wounds extensive injury has often been noted with no particular symptoms arising; and in the third place, the surgeon can readily control any bleeding which he may cause—so upon the whole, I regard his position as not well taken.

In 1883 Macewen, in a case of extravasation of blood into the white substance of the motor tract, where the clot was located by the symptoms present, operated and removed the clot, with recovery of the patient. Since that time a few operations have been made. Lucas Championnierre not long since reported to the Académie de Médicine[8] a case of trephining for cerebral hæmorrhage. A man, aged 53, had an attack of cerebral hæmorrhage, the focus of disturbance being localized at the middle part of the precentral convolution; upon operation the remains of an old clot were found and removed, and the hemiplegia and aphasia disappeared. Championnierre has been able to collect statistics of thirty such cases, all of which were non-traumatic in origin, with no deaths and no untoward occurrences. Encouraged by this success, in spite of the condemnation of authorities, I have operated once for cerebral hæmorrhage, not traumatic.

Case.—Dr. W. C. B., age 47, had a slight attack of cerebral hæmorrhage in the early part of 1891. I saw him at Carthage, Mo., October 10, 1891, in consultution with Dr. R. T. Scott. The following is the entry in my case book: "Patient had 'stroke of paralysis' about two weeks ago; had all the symptoms of cerebral hæmorrhage, has not entirely recovered consciousness since. Has right hemiplegia and complete aphasia; has been rapidly emaciating, has lately had paralysis of sphincters, dysphagia and fever (temperature 100° to 101° F.), strength rapidly failing, to an alarming degree past few days; indicates that he has terrible pain and tightness in head, with insomnia therefrom. At 3 P.M., assisted by Drs. Mathews, Scott, King and Schafer, I opened the skull over motor and speech centres. No pulsation of dura. On opening dura found some softening of arm centres; enlarged fenestrum and examined speech centres; no evidence of clot there, but indications of severe pressure. Removed remnants of clot (subcortical)

and some of softened arm centre, irrigated with hot bichloride solution, 1 to 5,000, put in catgut drainage and closed. Duration, one hour and thirty-five minutes. Put to bed in good shape with little shock. Pulsation of brain returned (at opening in skull) after operation.

"October 11. Slept finely all night on morphine, gr. ¼, and atropine, gr. $\frac{1}{60}$. At 9 A.M. is feeling first rate, better than at any previous time, mind much improved, can say 'Oh yes!' quite distinctly, and can move foot to marked extent. At 4 P.M. dressed wound and removed drainage, applied large quantity of iodoform and put on permanent dressing."

The subsequent history is given by Dr. Scott thus: "Three hours after our redressing the wound the temperature dropped from 100.5° to 99.6°. On the following day (October 13), temp. 99°, pulse 110, stomach irritable; applied mustard, and ordered milk and limewater in small quantities frequently repeated. At 4 P.M. temp. 100.5°, pulse 110 and intermittent, patient restless. Gave sulphonal 55, in milk, repeated in two hours, also hydrargyri protiodid. gr. ¼ every two hours until bowels move. October 14, 9 A.M. Temp. normal, pulse 100 and regular, appetite good; can urinate without catheter. At 7 P.M., temp. normal, bowels acted freely from mercury. Having slept well the night before, sulphonal was repeated. October 15, condition improving. October 20, on removing dressings, found head as dry and clean as when first applied; wound healed by immediate union. Patient is able to sit up several hours each day, and is entirely free from headache he had prior to operation."

The patient came to Kansas City, 203 miles from Carthage, on October 30. The amount of improvement was so great as to actually shock me. And a letter written November 24, by Dr. Scott, says: "Dr. B. is still improving."

Comment is unnecessary.

BRAIN TUMOR.

Operation for brain tumor is certainly an inviting one, the result from the expectant plan being invariably fatal, generally within two years. The wonderful changes sometimes apparently wrought by internal medication are deceptive, but do not prolong life. In most instances the growth can be readily localized, and in a large proportion of cases it is within reach of the surgeon's knife. While it is probably true, as Agnew says,[9] that "the results of operations for extirpation of brain tumors cannot be considered as particularly brilliant," from the few cases I have seen, and from the excellent results obtained by Macewen of Glasgow, Carson of St Louis, as well as others, I must agree with the statement of Clarence Bartlett, of Philadelphia,[11] that "in the absence of any reliable cure of brain tumor, one is not justified in waiting long for results if the symptoms are such as to enable him to locate the lesion accurately." As to this question of location, M. Allen Starr[12] states that about one-third of all cases occur in the basal ganglia, internal capsule, corpora quadrigemina, crura, pons and medulla, and so are inoperable. Of the remaining two-thirds, a considerable percentage must be amenable to surgical treatment. Even though the tumor may not be found, a large trephine hole may afford much relief if the button be not replaced, as in a case reported by Fischer, of Breslau,[13] and also in a case of double trephining by Koeher,[12] to relieve symptoms when localization was impossible, the only pronounced features being choked discs, deterioration of vision, headache and unsteady gait. One opening was made anteriorly in the frontal region, with some bulging of the dura, and one posteriorly just below the tentorium cerebelli, where a hernia cerebri formed, which was removed with a Volkmann's sharp spoon, and the wound closed. Union by first intention was secured. Four days after operation the congestion of the discs had entirely disappeared and sight had improved. Seven weeks after operation the general condition was much better, sight the same, gait steadier and headache gone.

If the tumor can be located, I believe it should be removed if possible, even though it give but temporary relief. Some cases have been certainly *cured*, and the cerebral functions, strange as it may seem, entirely restored, after removal of even very large intracranial growths. Thus in a report by H. H. Mudd, of St. Louis,[14] an immense echinococcus mass was removed from the brain of a girl of 12 years, it being larger than a hen's egg and located in the motor region, reaching from the convexity to the lateral ventricle. After shelling out the tumor, the wound was treated in the usual manner, the hole, large as it was, closed up, and the motor disturbances cleared up, viz.: tremor and hemiparesis, accompanied by hemianopsia and choked discs. Bremer explains[14] restoration after such colossal defect by the assumption "that the fibres of the corona radiata, in which the tumor laid, were not destroyed, but merely pushed asunder; that though perhaps the myeline sheaths of these fibres were atrophied by pressure, the more resisting axis cylinders had preserved their continuity, and that complete regeneration took place."

VARIETIES.

The great majority of brain tumors are either syphilitic or tubercular—occurring as gummata or caseous masses respectively, the latter chiefly in young subjects. Other forms of tumor—more rarely met—are osteomata, sarcomata, fibromata, gliomata, carcinomata and cysts. Tumors other than those mentioned (very rare) are cysts of the

arachnoid, hydatids, plexiform angio-sarcomata, endotheliomata, etc.

Gliomata.—These growths, if not very vascular, may be easily removed. They are almost always found in the gray matter. If thoroughly extirpated recurrence is not probable and *all* symptoms may disappear. Thus P. Postemski, of Rome, on May 24, exhibited to the Royal Medical Academy at Rome[15] a case upon which he had successfully operated some months before; all of the symptoms were gone and the woman was (apparently) completely restored to health.

Fibromata.—Fibromata springs from the meninges, are therefore easily accessible and readily subjected to extirpation. In the few cases I have been able to discover in recent literature success has been the result invariably.

Carcinomata.—Carcinomata are not frequently met in the brain; they are attended with just as great danger of return after removal as in any other part of the body. They commonly have a mass of hyperæmic and softened brain matter around the morbid growth, but in spite of this may be cut away, the adjacent tissue being cleaned out with a cutting Paquelin cautery.

Cysts.—Cysts are comparatively rare. They can ordinarily be removed without difficulty, though in a case in the practice of Dr. John Punton, of this city, operated upon by myself, there was not sufficient integrity to the cyst wall to allow of removal had such been our intention; the cyst was simply opened and a drainage-tube inserted. Experience has shown that cysts opened and drained give almost as good results as cerebral abscess.

Gummata.—Of these Horsley remarks: "Cerebral gummata should be removed—iodide of potassium palliates but does not cure them"—a statement in which all who have studied the subject must concur. The assertion of Agnew[1] may be taken as especially applicable to this class of cases. "The triumph already achieved by the conjoined labors of the neurologist and surgeon may be the harbingers of still greater ones in the future."

Sarcomata.—Sarcomata found in the head are either spindle-celled or myeloid as to variety. They may spring from the diploë, widely separating the tables, and at last breaking through with much suffering, especially if the growth be directed inward. In most instances they develop in the dura mater; the question of extirpation in such cases is of vital importance and still undecided. They frequently perforate the cranium and spread beneath the scalp, in which instance there is usually a distinct pulsation in the mass, reducibility when small and a characteristic sharp opening in the skull. I believe excision to be the correct thing, as Mansell Moulin maintains;[17] the only question which arises in my mind is as to justifiability in advanced cases. Increasing experience in cerebral operation and (especially) observation of several cases of extensive destruction of the dura in St. Margaret's hospital in this city (under Dr. Perkins) lead me to the conclusion that we may remove a much larger portion of the dura than we have been wont to believe. I have removed an area 2½ by 3½ inches without apparent ill effect so far as cerebration is concerned. If the scalp and periosteum be brought over the hole so as to completely close it the brain gets on very well—in certain parts at least. In view of which I am strongly of the opinion that operations for sarcomata might be successful in more cases than now reported were surgeons less saving of the dura; and even should permanent paralysis result from interfering with motor areas such a termination is far better than death from the neoplasm.

Osteomata.—Those concerning us in our study of cerebral surgery are of the inner table or diploë (enostoses). As a rule they are of slow growth and may be left alone; but if serious symptoms arise, as displacement of the eyeball by osteoma of the frontal sinus or indications of intracranial pressure, they must be removed. A case in point is as follows:

Case.—Dr. W. L. W., aged about 35, first came under my care in the summer of 1889. He was then afflicted with aphasia and hemiplegia, of supposed syphilitic origin. There was considerable improvement after he had taken several drachms of mercury (red iodide) and some three pounds of iodide of potassium, with faradism for the paralysis, and in the autumn of 1889 I accompanied him to his home in Fairport, N. Y., and gave him into the hands of the trusted family physician who continued the treatment. February 5, 1891, he made his appearance at my office, saying he had come from New York for the purpose of having craniectomy made. I therefore placed him in the hospital for operation. My record made at this time states that "aphasia has greatly improved; disposition has changed so that patient is irritable, irascible and emotional, crying and laughing on slightest provocation; at present there is partial paralysis of entire side and complete of forearm; complains of constant priapism and constipation. Seems to be almost an imbecile at times; at others is quite rational but very emotional. Most of time passes urine in bed unconsciously—always unless drawn with catheter; has peculiar spasm of throat at times. Is very vulgar and obscene in language and careless of personal habits." On February 24, assisted by Drs. Richard Callaghan and J. W. Kyger, I opened the head with mallet and gouge over supposed site of trouble, removing the large piece of skull here exhibited: the opening was a little too far back, as at the anterior part only the bone was found greatly thickened and eburnated

—in fact the bony tumor was so hard that my large Rongeur forceps were broken in attempting to remove the growth, and the ivory-like tissue had to be cut away with carpenter's chisel and another forceps. The opening thus made measured about 1½ inches by 3 inches, or a little more.

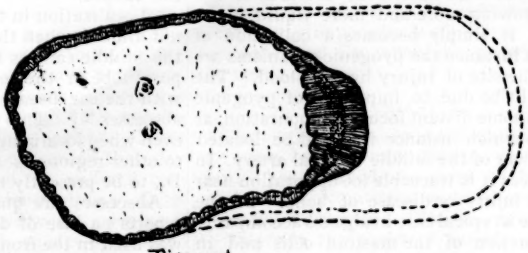

Figure 1.

Black line shows size of opening made with chisel; dotted line shows part removed with Rongeur forceps — actual size. —

This osteomatous tumor was of somewhat irregular shape, but quite smooth upon its surface; the pressure was such as to cause much bulging of the brain into the opening before the mass was taken away.

Figure 2.

Vertical section of piece removed with chisel; dotted line shows extent of tissue removed with cutting forceps — actual size. —

Examination of the brain gave negative results. The remnants of dura were sutured without drainage, but a small rubber tube was put through the scalp, and wound in the scalp and periosteum closed with catgut sutures. Patient was put to bed in good condition.

Next day patient was much brighter and called for urinal instead of wetting the bed; no fever; in the evening he went to closet for movement of bowels. On morning of second day patient insisted upon dressing and going about ward as before operation; this he did daily with no apparent harm. The drain was removed on the third day; wound healed nicely by primary union; there never was an untoward symptom.

About the first of April he was discharged; there was great improvement in mental condition; rectal and vesical troubles were gone; difficulty in talking and deglutition had entirely disappeared; emotional disturbances had ceased; but paralysis remained unchanged. He was advised to go to some watering place and to use electricity for the paralysis, but unfortunately while *en route* to Waukesha he took too large a dose of morphine, and abruptly ended the case history. I believe that he would ultimately have recovered because the electro-muscular contractility was not entirely lost, though almost absent in the forearm.

Cerebellar tumors (presenting symptoms of vertigo, vomiting, tenderness over the occiput, cerebellar ataxia and paralysis of the fourth nerve) have proven bad cases for removal. In a dispensary case which came under the joint treatment of Dr. F. B. Tiffany and myself, we made a diagnosis of tumor of the middle cerebellar peduncle of the left side; exploratory operation was offered and refused; death was sudden; the autopsy confirmed the accuracy of our diagnosis but showed that an operation would have been unsuccessful as the growth extended downward until it implicated the fourth ventricle.

ABSCESS.

Abscess of the brain, from a surgical standpoint, is more favorable than tumor. The rule now is to operate always—death is certain; relief is sure if operation be made early enough; the mortality is very slight—three out of seventeen

cases collected by Von Bergmann—as compared with 100 per cent. mortality without operation. This condition may be the result of traumatism even when the skin has not been injured nor the bone broken (Mansell Moulin). The suppuration may be either diffuse (acute cerebritis running on to suppuration and proving fatal within a few days) or circumscribed, the area of red softening growing more and more liquid in its center until it simply becomes a collection of pus. In this instance the pyogenic organisms are carried to the site of injury by the blood. The abscess might be due to impaction of pyogenic emboli from some distant focus of suppuration, as the lung, in which instance it would be located near some twig of the middle cerebral artery. In most instances it is traceable to suppuration near by, as from injury or disease of bone. Of the latter we see a typical case in abscess accompanying inflammation of the mastoid cells and in otitis media suppuration.

But, whatever the cause, as intracranial suppuration, if left to itself, is practically hopeless, the indications are always to open the skull, evacuate the pus, irrigate the abscess cavity and establish free drainage. So essential is this that when the dura is opened at the supposed seat of abscess and no pus is found, an aspirating needle may be thrust into the brain in all directions until the pus is located. I have often used a large needle in this way (even withdrawing some fluid from the ventricles) without apparent harm to the brain. Great care must be exercised not to practice this extensive exploratory work in those doubtful cases which, instead of being cerebral abscess, are thrombosis of the lateral sinus or pyæmia from middle ear disease—conditions which closely simulate abscess in their clinical picture. Here the mastoid antrum must be explored first and free communication established with the external auditory meatus; by thus doing many cases of incipient meningitis might be averted. But if no pus is found, exploratory trephining must be made either a half inch above and somewhat in front of the meatus (to explore the anterior surface of the petrous bone) or just behind the meatus and on the same level. It is best perhaps to first explore the orifice of the mastoid vein and if no evidence of thrombosis be found, to then make the opening in front, exposing the under surface of the tempero-sphenoidal lobe where the abscess is often located.

"If no abscess is found in the anterior operation either between the dura mater and the bone, or in the substance of the brain, and there is no evidence of thrombosis even when the mastoid vein is exposed, the periosteum and muscular attachments must be separated from the occipital bone beneath the superior curved line, and the lateral lobe of the cerebellum be explored. In many cases of cerebellar abscess, however, there is sinus thrombosis as well, and there must always be some danger of one of the two being overlooked if the other is found. If extra-dural abscess or thrombosis of the lateral sinus are found, the jugular vein should at once be ligatured. The only hope lies in thoroughly cleaning out the clot and removing the whole focus of the disease." [18]

"Localization in this class of cases as a rule is not difficult when the history of suppuration of the middle ear has been established. The temporal lobe or the cerebellum on the same side with the ear disease are the usual seats of these abscesses." [19] This rule should not be ignored even when localizing symptoms and history point to other regions as well, as in the case of Chas. D., to be presently mentioned.

Abscesses are quite often not single. Kidd reports [20] a case of double abscess; the trephine was used in the frontal region and pus evacuated from an abscess; the patient died on the fourth day and the post-mortem revealed a second and larger abscess in the tempero-sphenoidal lobe of the right side *without* (a rarity, indeed) disease of the petrous portion of the temporal bone; the cause of the frontal softening was the recent kick of a horse; that of the posterior abscess was unknown—it usually being due to caries and often existing for months or years. A case almost precisely similar was lately operated upon by myself.

Case.—Chas. D., age 32 years, patient of Drs. Kestler and Mosher, received a blow upon the right side of the head by a cable car on the night of Sept. 18, 1891. He was stunned for a little time but recovered and went about his business next morning, though his employer noticed that he acted strangely—"dazed" as he expressed it. This condition continued until about October 11, 1891, when he had to go to bed on account of the increasing headache, especially marked at the junction of occipital and parietal bones of the right side. He developed fever, had a severe general convulsion, repeated chills at irregular intervals, and finally became delirious and semi-comatose. I first saw him October 18, in consultation with the doctors, but as there appeared to be marked amelioration of the symptoms it was decided that an operation should be deferred. He soon became worse again and continued to decline until the 23d. At 2 P.M., the doctors determined to have the operation made and at 4 P.M., arrangements were completed; but at that hour patient was in profound collapse, pulse weak and intermittent, extremities cold, eyes strongly turned to the left and insensible to light. Operation was therefore again postponed, stimulants being used vigorously. At 9 o'clock, October 25, we again met, Drs. C. D. McDonald and E. W. Myers being also present.

Upon opening the skull (about one and one-

half inches behind and a little above the external meatus of the right side) the dura bulged prominently into the hole, and was entirely without pulsation. On turning back the dura a large area of softened brain tissue presented—not yet broken down into pus, there being only a little spot of complete fluidification; this was scooped away and the surrounding red softening curetted with a sharp spoon and touched with the Paquelin cautery. A needle was now thrust in two or three directions without finding pus, but indicating quite extensive softening; this was very apparent to the touch of the finger also. After irrigation a drainage tube was inserted and the usual dressings applied. There seemed to be a slight improvement that day in his mental condition, but he suffered considerably from shock. On the evening of October 27, we dressed the wound; upon opening it up about one and one-fourth ounces of pus and broken down brain matter escaped. Dressings were reapplied and patient made easy, but he continued to sink and died next morning from shock and exhaustion.

The autopsy showed another abscess, evidently of months' standing, in the left side, due to caries of the petrous bone. While this had existed for a long time, the only evidence, presented *ante mortem*, was a chronic discharge from the middle ear and an occasional sharp pain in the occipital region of the left side. Death, in my opinion, was due to the recent abscess for which operation was made, though the concussion producing it may have set up trouble at the old focal lesion. Sooner or later, however, the latter would undoubtedly have caused death if not recognized and emptied.

In connection with the subject of abscess, it is of interest to note that Orlow has reported[21] the history of a woman, aged 27, who was affected by suppurating thrombosis of the lateral sinus, diagnosticated by symptoms and successfully treated by trephining. Briggs (C. S.), of Nashville, has had a somewhat similar case; operation for sinus thrombosis is quite common in ma toid disease.

CEPHALALGIA.

Although it may seem rash to advise opening the skull for a thing apparently so simple as headache, there are certain cases of cephalalgia which resist all therapeutic measures; where such prove persistent and intractable, trephining should not be forgotten. Keen has operated once for intense headache following a blow, with complete relief from pain. Agnew[9] reports two cases of persistent headache not relieved by medical treatment, one cured and one improved. Martin, of Philadelphia, is quoted by Agnew as having had a cure following operation for headache. Horsley has operated four times with four cures. Prewitt, of St. Louis, twice with like result, and a number of other operators have had similar success.

In one case of almost unbearable headache which came under my own care in 1890, trephining completely relieved the distress, and permanently. I believe Victor Horsley is correct in advising that trephining be done in all cases of headache which prove refractory to other measures. Especially is this true of localized headaches and also when the pain seems to be the result of injury.

INSANITY.

The suggestion to open the skull in insanity is not new, but its execution is recent. Burckhardt[22] has detailed six cases of insanity with marked hallucinations, which he subjected to operative treatment. "In two cases he aimed to intersect the paths of association which he thinks transmit the impression coming from sensory parts and certain ideogenic areas of the brain. A portion of the frontal and parietal lobes, before and behind the ascending convolutions, were removed with very satisfactory results in one case, the other being still under treatment. In the other four cases the hallucinations were more or less acute, and in these cases the operator attacked the centers through whose injury sensory and motor aphasia are produced, and removed a part of the first temporal and third frontal on the left side, which appeared diseased, and with satisfactory results. It is possible that, with additional experience and a minute study of the pathological changes seen in the brain, the knife may be the means of restoring to reason many cases now considered incurable." But the question naturally arises: were or not these cures the result of the operation *per se*? Only further experimentation and careful observation can determine. It is in the first stage of general paresis that I shall look for beneficial results, for here we have a mental disease (so-called) which is dependent upon gross lesions. In insanities dependent upon intra-cranial growths, the indications are always to operate.

EPILEPSY.

The question as to the propriety of operating for epilepsy, traumatic or otherwise, has been much discussed. There certainly appears to be much to base hopes upon, but results have not been altogether satisfactory—in fact, while there have been some very brilliant cures, especially when due to trauma, no improvement has been secured in a large proportion of cases. Personally I have operated once—a dismal failure. But I am persuaded to try it again by reports such as that of Péan.[23] Patient for years suffered from inherited epilepsy, not traumatic; internal medication failed. There was no localizing symp-

tom save pain, but an operation was made at the seat of pain and an angioma removed from the meninges, and implicating the superior longitudinal sinus. Cure has been complete and unquestioned.

Victor Horsley is a strong advocate of trephining for epilepsy; but upon the other hand White, of Philadelphia, regards[24] improvement as only temporary, and dependent upon the mental impression, and Agnew positively states,[9] "traumatic epilepsy is practically incurable by surgical operation," though he admits there are cases on which internal medication exerts no controlling influence that may be with great propriety subjected to operation, and cites the 102 cases collected by Laurient[25] with 54 per cent. cured. But, he says—and too much emphasis cannot be laid upon it—it is not too much to assume that surgery is responsible for the great majority of traumatic epilepsies, because of poor treatment at the time of injury, the doctrine that depressed fractures of the skull without symptoms require no operative treatment being responsible for many unfortunate sequelæ. I quote his own words: "However small may be the depression which follows a fracture of the cranium, save in one or two localities, it will encroach enough upon the dural nerves to cause more or less irritation, which, though insignificant at first, and not at all recognizable to the consciousness of the patient, yet eventually that irritation will be propagated to the cortex and brain ganglia, until finally the paroxysmal explosion occurs. . . . . Whenever, therefore, in my judgment, the profession can accept the doctrine that *all depressed fractures of the cranium, however slight may be the depression, and entirely irrespective of pressure symptoms, are proper subjects for trephining*, then will traumatic epilepsy largely disappear."

Jacksonian Epilepsy.—In cases of limited epilepsy, or whenever the convulsion invariably begins in the same muscle or group of muscles, exploratory trephining is surely indicated, though as yet cases are too few and results too unstudied to warrant any definite promise of success. Parkes, of Chicago, warmly recommended operation, and others have been equally enthusiastic.

TUBERCULAR MENINGITIS.

Here is a disease wholly incurable by any method thus far devised. Some months ago I wrote:[26] "It is not unlikely that the time will come when we will boldly open the skull and wash out the meningeal spaces in cases of tubercular meningitis, as we do the belly in tubercular peritonitis. The peculiar disappearance of the tubercular process in peritonitis treated by flushing the abdomen, leads to the inevitable conclusion that a similar result may be anticipated in the analogous condition, tubercular meningitis, especially when complicated with hydrocephalus."

Scarcely a week had passed when I was called upon to operate. I immediately addressed letters to Profs. Senn, of Chicago, and Keen, of Philadelphia, asking if operation were justifiable. The one replied: "I would tap with a small trocar under strictest antiseptic precautions, and inject 2 drachms of a 10 per cent. iodoform-glycerine emulsion, and repeat as often as necessary"—practically the same treatment as had proven so successful in tuberculosis of joints; the other advocated opening the skull, tapping the ventricles, irrigation and drainage. But the patient died before receiving their replies, and I was probably spared the necessity of adding a third fatal case to my list. It does seem to me, however, that something may be done in a surgical way for these fatal cases.

MICROCEPHALUS.

Last year Lannelogue, of Paris, proposed an operation for the relief of idiocy dependent upon microcephalus, believing the deficient cerebral development to be the result of premature closure of the fontanelles and sutures. This operation, which he calls craniectomy, he has performed twenty-four times, with varying degrees of success. Keen has also operated—in one case with marked improvement — but he believes simple trephining will accomplish as much as the more formidable linear craniectomy. Wyeth, of New York, has done the linear operation four times with two deaths, and decided improvement in one case. Van Lennep, of Philadelphia,[27] has operated twice—one child died three days after operation, the other, a boy 5 years old, has improved slightly. McClintock, of Topeka,[28] has made one operation, with very decided improvement. Other men have operated without death, but it is too early to report as to success or failure.

Two cases have been operated upon in Kansas City: one by Dr. J. F. Binnie, and one by myself. Both children died from shock. The history of my operation is as follows:

Lydia H., age 11 years, patient of Dr. John Punton. Was hurt when about 18 months old by a fall; picked up in an unconscious state. It was found that the right knee was injured. Convulsions recurred for some time after the injury. Condition of knee grew worse. At age of 5 years had scarlet fever, causing otitis media of left side, which was cured after a few months. Though lame, she at 7 went to school and began to learn to read. Soon afterward she had a severe spasm, repeated at frequent intervals for twenty-four hours, and since that time convulsions have been more or less frequent—at first at quite long intervals, but gradually increasing in frequency and intensity, until the average is from

twelve to twenty each week. In 1888 she lost her speech, and has not spoken since; this was accompanied by hemiparesis of left side. In 1889 leg was amputated for tumor albus; since operation left ear has again discharged, but hearing in right ear is good. Case came under care of Dr. Punton one year ago, and was placed on large doses of bromides, which seemed to control the spasms at first, but they soon returned as bad as before. She was greatly emaciated, but upon discontinuance of the bromides, under tonics and forced feeding, has much improved physically.

I first saw the case October 18, 1891, and made the following note: "Patient well developed physically; head unusually small and unsymmetrical, occiput being very prominent, especially on right side, face blank and expressionless, eye bright, and of the peculiar staring and restless character so often noticed in microcephalic children, pupils much dilated. Discharge from left ear; speechless, pays very little attention to what is said or done, lies upon floor and plays idly (for hours, it is said), with little pieces of wood; passes urine and fæces in diaper, apparently without notice, has to be fed—in fact, lives a purely vegetative life. Is said to be irritable and vicious, *i. e.*, liable to harm others if not watched. At times is said to be much brighter, but for weeks at a time will seem to be oblivious to surroundings. At such times is apt to have many convulsions."

November 1, 1891, assisted by Drs. Eggers and Punton, I opened the skull on the left side, over the Rolandic fissure and the speech centre. There was some bulging of the dura, and no impulse. Upon opening the meninges, suspecting a cyst, I pushed an aspirating needle 1 inch into the brain, and withdrew 6 drachms of serous fluid. The needle was followed down with a bistoury, a free opening made, and drainage established. The dura was brought together with one or two sutures, and the scalp closed with continuous suture, except at point of drainage. The scalp was then reflected from the right side, and a linear craniectomy made, the opening being ¾ inch wide and 4½ inches long. The dura was opened to permit inspection of the motor areas. There was distinct cloudy infiltrate in the pia mater, with adhesions to the convolutions in the arm and leg centres. The opening was enlarged with Rongeur forceps, because of *extreme* tension over motor areas; the adhesions were broken up, wound irrigated, dura closed, drainage tube to dura, and scalp closed. Duration of operation, one hour and forty minutes.

Patient was put to bed with profound shock, from which she never rallied. Upon recovering from the anæsthetic, there was a look of intelligence and brightness about the face that made the friends exclaim, "That change is enough to justify any operation." But in spite of vigorous measures, she died at the end of forty hours.

Autopsy.—Nov. 4, 1891. Post-mortem examination held fifteen hours after death. Present: Drs. John Punton, J. T. Eggers, J. N. Jackson and Emory Lanphear. Rigor mortis well marked. Wounds in good condition. Upon removing calvaria pachymeningitis of long standing well marked everywhere. Right brain much smaller than left, and whole far smaller than normal; brain paler than natural. Sinuses empty, but vessels of pia much injected. Chronic inflammation of pia extensive. Dissection of brain revealed a cyst a little larger than a pigeon's egg in the speech convolutions a half inch below the surface, and encroaching upon the second frontal convolution. It was surrounded by a somewhat softened condition of the white substance, and walls of cyst were very thin. Frontal gyri not well developed.

Here was a case that promised something, and I am sure, had life been preserved, that there would have been some improvement, although speech could probably have never been restored; though what the developmental process might have brought forth is problematical.

I certainly cannot agree with Bremer that linear craniectomy for microcephalus is a bad operation. Of course, where there is a primary lack of cerebral development, closure of sutures being secondary, nothing can be expected from surgery; but there can be absolutely no doubt that some cases of defective mental development are secondary to premature closure of the skull, and in such craniectomy is certainly not only justifiable, but promises success in at least a moderate percentage of cases. So far as I can learn, the primary mortality is about 11 per cent.

METHOD OF OPERATION.

Whenever possible, the head is shaved on the day before operation, and an antiseptic dressing applied after careful scrubbing with soap and water. When the patient is anæsthetized (chloroform *always* being employed, because of contracting the cerebral vessels, and less liable to cause vomiting), the scalp is thoroughly scrubbed with brush, soap and water, dried, washed with ether, and then with bichloride solution, 1–1000. At this point, ¼ grain of morphine may advantageously be injected hypodermatically. A row of sutures are run "back stitch" around the field of operation to control bleeding from the scalp. A large flap is made, the cut being clean, and carried through the periosteum; a silk suture may be run through this flap as it is reflected and given to an assistant to hold. The method of entering the skull varies according to the habit and skill of the operator. Personally, I prefer the Galt trephine for fractures and the like, but for extensive openings I use the gouge, Rongeur and mallet and chisel. In twenty-three

operations I have never seen any bad effect follow their use, unless it be in the last case reported. Too heavy blows may, of course, produce shock, as Agnew has pointed out, but, by not too vertical position, and with gentle taps, the skull may be opened far more safely than with the trephine. If the primary opening is found to be too small, it may be enlarged with the Rongeur. If one desires to replace the chips, they are put in a mild bichloride solution of a temperature of 105° F., and when ready, are put back upon the dura in a kind of mosaic; these will grow to their place again, as practiced by Macewen, Adamkiewicz, and others; or we may fill the cavity with decalcified bone chips, after the manner of Senn, or even transplant from the goose, as in Jaksch's celebrated case. But I cannot see any special advantage in this (except in cases of extensive traumatism, where a large part of the brain is exposed, or in operation for neoplasm), as in operative cases we usually wish to remove intracranial pressure; besides, the opening is so promptly and satisfactorily filled with fibrous tissue that it is useless trouble, and the pieces *may* act as a foreign body.

The incision through the dura may be crucial or preferably made to follow the line of incision through the bone about one-eighth of an inch from the margin, and extending three fourths around the circumference. The meningeal arteries may be caught with forceps and tied with fine gut, as anywhere else in the body. Hæmorrhage was formally greatly feared. Indeed, four years ago, when I accidentally cut the superior longitudinal sinus, I did not know how to control the bleeding, so I clasped it and the bone in a pair of forceps, and left the latter *in situ* for four days—with recovery; it was a case of gunshot wound, and not included in this list of cases. But now we have learned that the sinus can sometimes be tied, and if not, hæmorrhage can be checked by packing with iodoform gauze. Even in rupture of the lateral sinus this expedient has repeatedly proven efficient. For tying vessels of the meninges and brain, I employ juniper-oil gut, carefully prepared and softened. Bleeding from the diploë gave me much trouble in my earlier operations, and the use of wax, etc., was unsatisfactory and unscientific; now I simply punch the bleeding points with the handle of some convenient instrument, or even crush the bone if necessary. For small vessels in the substance of the brain, hot water irrigation usually suffices; but if persistent, they may be touched with the tip of a Paquelin cautery, or the wound packed with iodoform gauze. As the arteries which supply the brain itself are terminal, every vessel should be scrupulously maintained if possible; many times, as Horsley has shown, they can be lifted out of the sulci and preserved.

Hot water (115° F.), previously boiled, should be at hand to check bleeding, and, furthermore, for the purpose of douching the wound and head when symptoms of collapse appear. It has a wonderful effect in restoring the pulse and preventing shock.

In operating for tumor, if the growth does not present by simple inspection, palpation may detect it, and if not, the cortical substance may be cut through and the incision carried into the white substance. Such incision must be vertical, and directed into the corona radiata, avoiding, when possible, injury to other fibres, especially those going to the internal capsule. The gap in the brain caused by the removal of a tumor rapidly fills by eversion of the cut corona radiata and by granulation tissue, if large.

When the work has been done, the wound is carefully irrigated, and the flap of dura turned back into place. I always suture the dura with finest catgut, unless there be some strong contra-indication. Few cases require a drain through the dura. A few strands of gut or a small drainage tube may be placed under the scalp, iodoform dusted in, the scalp sewed, and the wound dressed as any simple cut.

Shock is one of the great drawbacks to cerebral operations. In one of my two fatal cases, death undoubtedly occurred from this cause. Whenever possible, the patient should have a rest in bed for a few days before operation (unless very robust), with stimulants and forced feeding. At the time of operation, Champonierre advises one-tenth of a grain of sulphate of strychnine hypodermatically after the patient is under the influence of the anæsthetic. After the operation, the head must be kept low, the body very warm, and the usual remedies for shock employed (alcohol, digitalis). The after-treatment is the same as that of any other capital operation.

REFERENCES.

1. Medical Review, St. Louis, Oct. 17, 1891.
2. Personal communication to author.
3. Transactions International Medical Congress, 1891.
4. Korrespondenz-Blatz für Schweitzer Aertze, Nummer 29, 1891.
5. Canadian Practitioner, May, 1890.
6. Annual of Universal Medical Sciences, 1891, Vol. II, Sec. A, page 17.
7. Familiar Forms of Nervous Disease; by M. Allen Starr, M.D., Ph. D., New York. Wm. Wood & Co., 1890, page 41.
8. Kansas City Medical Index, August, 1891, page 314.
9. University Medical Magazine, Oct., 1891, page 26.
10. American Journal of Medical Sciences, Sept., 1890.
11. Hahnemannian Monthly, Nov., 1891, page 767.
12. Annual of Univ. Med. Sciences, 1891.
13. Berliner Medicinische Wochenschrift.
14. Weekly Medical Review, Nov., 1891.
15. Riforma Medica, June 4, 1891. 16. Loc. cit.
17. A Treatise on Surgery; by C. W. Mansell Moulin, M.A., M.D., London. P. Blakiston, Son & Co., Philadelphia, 1891.
18. Mansell Moulin, loc. cit.
19. Ludwig Bremer, Medical Review.
20. London Lancet, Feb. 2, 1890.
21. Annual of Univ. Med. Sciences, 1891.
22. Gazetta degli Ospitali — International Journal of Surgery, Oct., 1891. 23. Bulletin de l'Académie de Médicine.
24. Annals of Surgery, August, 1891.
25. Journal de Médicine, de Chirurgie et de Pharmacologie, May 20, 1891.
26. Kansas City Medical Index, July, 1890, page 273.
27. Hahnemannian Monthly, Nov., 1891, page 765.
28. Kansas Medical Journal, Sept., 1891.
29. British Medical Journal, Aug. 11, 1885.

SOCIETY PROCEEDINGS.

Medical and Chirurgical State Faculty of Maryland.

Semi-annual Meeting, held at Rockville, Md., November 17 and 18, 1891.

President, Dr. Wm. H. Welch; Secretaries, Drs. Robert T. Wilson and William B. Canfield.

TUESDAY, NOVEMBER 17—FIRST DAY.

The meeting was called to order by the President, and Dr. E. E. Stonestreet, of Rockville, delivered the

ADDRESS OF WELCOME,

in which he regretted the illness of Dr. Maddox, and after recalling the early days of that part of the country, he welcomed the members of the Society in the name of the Montgomery County Medical Society. Dr. Wm. H. Welch, the President, in reply, thanked the County Society for its hearty welcome, and said it was a special pleasure to accept their kind invitation, because it was given so heartily. It was the desire of the State Society to make it a representative body and include all the local societies. He was glad to see such a large number, and hoped they would all feel at liberty to enter into the discussion.

Dr. Wm. H. Welch then delivered the Presieent's Address, on

THE BACILLUS COLI COMMUNIS; THE CONDITIONS OF ITS INVASION IN THE HUMAN BODY, AND ITS PATHOGENIC PROPERTIES.

He began by saying that it might be considered rather remote from the interests of practical medicine to consider this subject; its study might not help diagnosis or treatment, but it was of the greatest interest, and in this case he thought he had something new to communicate. The invasion into the circulation or system of the bacillus coli communis had been always regarded as unimportant, and this organism was supposed to have no pathogenic properties; but now we know it has. It has long been known that a great many differ ent kinds of low forms of life are in the fæces, and it has been thought that it was hopeless to try to classify them. Dr. Woodward, of Washington, has studied them very carefully, and has shown that the great mass of the fæces consists principally of low forms of life. He did not classify the different species. It was not supposed that there were any bacterial flora there. We owe to Escherich, of Gratz, the knowledge of the fact that there are certain species of bacteria which have their habitat in the intestinal canal, and are found comparatively infrequently elsewhere. Of these the most important, because the most commonly found, is the bacillus coli communis. In 1885 he made his first contribution on the subject, his studies being based on the examination of the stools of nursing infants. He found this bacillus predominating. It is described as a short rod with rounded ends, about one-fourth to one-half the diameter of a red blood corpuscle; it is plump as compared with the tubercle bacillus. It has very little characteristic in its form. It is like many organisms which we already know. The typhoid bacillus resembles it so closely in its form, that one would not be able by the appearance alone, to distinguish them, but they can be distinguished by culture media. It is feebly motile according to some, and non-motile according to others. It grows in various culture media, in bouillon, in gelatin, in agar-agar and in a roll culture, the colonies are seen very faintly with the naked eye. The method of study is familiar to all bacteriologists. A sterilized platinum needle is passed into the substance to be examined, and then put into the liquefied agar-agar; this is then rolled horizontally on a piece of ice until the medium is deposited in a thin film on the inside of the tube, which is put in the thermostat over night, and the result is these small colonies which you see here. Their growth and reaction may be also noticed in milk. Add litmus to the milk, and then inoculate it with the pure culture of the typhoid bacillus and of the bacillus coli communis, and in the former case the milk remains fluid, and in the latter case the milk is coagulated. It is important to know whether the bacillus coli communis has pathogenic properties or not. The answer to this is equally important, whether positive or negative. In typhoid fever, the trouble is we cannot find an animal susceptible to the typhoid bacillus. When an organism enters the body, it causes disease either by infection or by intoxication. Infection is when the organism multiplies in the body, and intoxication is when the organism emits a poison. The bacillus coli communis causes an infection, not an intoxication. In experiments on rabbits, he injected a pure culture of this organism, and the animals emaciated and died in two or three months. At the autopsy it looked as if death was caused by the organism getting into the gall bladder. The effect seems to be according to the amount inoculated. He came across this organism in a case of pancreatitis. The etiology of this disease, which Dr. Reginald Fitz, of Boston, had so thoroughly written up, is obscure. Cultures were made from this case. It is not a post-mortem organism. When found in the body, it is a sign that it got there after death. At the Johns Hopkins Hospital, the autopsies are made soon after death, and thus the danger of post-mortem organisms

is reduced to a minimum. The abdomen was opened, and a large flat knife, which had been heated in the flame, was laid on the pancreas, thus destroying all organisms that might be on the surface of that organ; then the sterilized platinum needle was plunged into the substance of that organ, and the œse brought up a little speck of substance, which was put into the culture medium. In the case just mentioned, in which the bacillus coli communis was found in pure culture, there was a diphtheritic-looking condition of the intestinal mucous membrane. The organism probably made its way through the diseased intestinal mucous membrane, and thus got to other organs. He had found it in no less than thirty-three of the 250 autopsies which he had performed at the Johns Hopkins Hospital. All of these had a lesion of the intestinal canal. All had dysentery and a diphtheritic looking condition of the large or small intestine. There were hæmorrhages, ecchymoses, typhoid ulcerations. The question to be asked is: "Is the invasion of this bacillus of practical interest or not; does it do harm?" There is no evidence that it does, but in some cases it seems to. He had had some cases at the hospital of dysentery caused by the amœba coli. In these cases, which were usually fatal, he had found with considerable constancy the bacillus coli communis. It may be a factor of some importance. There are cases in which the organisms do injury. He had seen several cases of peritonitis of late; this is a most common cause of perforation. The peritoneal fluid was examined, and it was found to be a pure culture of the bacillus coli communis. He had seen a number of cases in which this organism had caused an infection of the laparotomy wound. He had seen six cases in all. In a number of these cases there had been numerous adhesions. It caused fever, and prevented union by first intention. It also does harm in the secondary broncho pneumonias. It is caused by some lesion in the intestinal tract. Fraenkel found this a common cause of peritonitis in one-third of his cases. The streptococcus and staphylococcus were also found.

Dr. Ernest Black, of London, thought that more and more light was needed on the precise nature of the products of decomposition formed by the bacilli. He asked Dr. Welch what power the bacillus coli communis had to be decomposed and be absorbed by the healthy mucous membrane?

Dr. Welch replied that this organism is not known to produce injurious chemical substances. Lactic and acetic acids are produced in the fermentation of milk. We have very little work done on the subject, but he does not believe absorption takes place.

Dr. George J. Preston read a paper on

THE REST CURE, AND CASES TO WHICH IT IS APPLICABLE.

He referred to Hodge's experiments, and changes produced in nerve cells by stimulation, and the restoration of these cells by rest. Hence the rest cure has a physiological basis. The natural relief of pain is rest. The necessary things in a rest cure are, isolation, rest, forced feeding and artificial exercise. Isolation should be used with bad cases. No one but the doctor and nurse should see the patient. She should be removed from home, and should have no communication with her family or friends. The diet should be regulated with great care; baths, friction and massage should be used where indicated. Milk should form a very large part of her nourishment. Electricity should be used, particularly the faradic current; also cold sponging and cold spinal douches. To what class of cases this is applicable, it is hard to say. There is a distinctive and easily recognizable class of cases to which this treatment applies.

Dr. T. A. Ashby, of Baltimore, said that the principles of treatment as laid down by Dr. Preston were important both to medical and surgical cases. He had had a number of cases in his own practice, where the rest treatment had been of incalculable benefit. He thought the ovaries were removed too often. Patients do much better when removed to a hospital, out of the reach of sympathizing friends. He agreed with Dr. Preston when he said that the surgeon might just as well remove the testicles for seminal emissions, as remove the ovaries of a neurasthenic.

Dr. Robert T. Wilson thanked Dr. Preston for his paper, and seconded what he had said, because he had had the same kind of experience in his own practice. He then related a case illustrative of this point.

Dr. Roger Brooke, of Oakdale, was very glad to hear the paper, and thought such work was productive of much good.

Dr. Black thought that forced feeding was of the greatest importance, and advocated especially peptonized enemata. There are many cases in which the patient, even with the most perfect rest, will not show improvement until they are put on forced feeding.

Dr. Welch said that the work of Hodge was decisive. The prolonged irritation of a nerve causes a change in its cells. This shows that a prolonged and continued functional disturbance may cause an organic disease. Thus Hodge found that prolonged cases of neuralgia will cause an organic disease of the nerve, and Thoma showed that the blood vessels in the neighborhood of this irritated nerve underwent a hypertrophy of their walls. Dr. Putnam, of Boston, has shown that organic disease of the nerves will follow a reflex irritation of that nerve. He was

susceptible on this point at first, but now he believed it.

Dr. Edward Anderson, of Rockville, showed an old medical work published in the last century showing that antiseptic surgery was thought of at that early date. He also exhibited an old account book of his father's kept in pounds, shillings and pence, more than a hundred years ago in that county.

Dr. Anderson then read a paper on

TYPHOID FEVER.

This disease came from the same cause, whether lasting long or short, whether mild or severe. If mild it was sometimes called malaria, gastric fever, and in some cases it was called typho-malarial fever. These names should not exist. He would call it headache fever, for that symptom is never absent, although all the more commonly present symptoms may be absent. Typhoid fever is the scourge of Montgomery county. Rockville is the home of this disease. This should not be so, for except for man's intervention there is not a healthier place anywhere. But not a house on the main street that had not been visited by this disease, and nearly every family in the town had had some member suffer from the disease. In his experience it either killed in a few weeks or else it left the subject in a better condition than he was before. The town was situated on three streets, which ran parallel. During wet weather there was no danger, but as soon as the streets dried, which they did in a few hours after the rain ceased, the clayey dust carried the disease. The side streets were generally wet, hence there was not so much disease on them as on the main street. In one house he had seven cases in a short time and in another five. He quoted several cases, and gave his plans of treatment.

Dr. T. A. Ashby, of Baltimore, thought it was generally caused by drinking-water, and said it was only strange that we did not have more cases in the country than we do.

Dr. Preston said that the proof of the spread of this disease by drinking-water was the fact that there is comparatively little typhoid fever in the cities, and many cases that do occur are brought from the country. Milk is also a cause. A field fertilized by human dejecta may be the cause of spreading the disease. He had noticed that one year the cases were mild and the next year they were severe. This year they were very mild. The cases that were lost were those that applied for treatment too late, in the last stages of the disease, and had been walking about. He objected to milk as an article of diet in this disease. Not only was it a good culture-medium for the organisms, but on account of its casein it was very indigestible in this disease. He had a strong preference for egg white as a substitute.

Dr. Henry U. Onderdonk, of College of St. James, said he had had an opportunity to examine a large number of samples of water for physicians of the region, and he had found chlorides, nitrites, nitrates, and each sample was backed up by one or more cases of typhoid fever. In one case the water seemed to be pure, and yet there was the typhoid fever.

Dr. J. McP. Scott, of Hagerstown, said this was a subject always interesting. He thought it was doubtful that the disease came from certain soils. In Munich the disease disappeared with the improvement of the drainage. He thought there was no special plan of treatment, only the less the better.

The faculty then resolved itself into a convention and appointed Drs. T. A. Ashby, J. J. Preston, of Baltimore, J. McP. Scott, of Hagerstown, W. Frank Hines, of Chestertown, and Edward Anderson, of Rockville, a committee of five to confer with other committees to frame a proper law for the regulation of the practice of medicine in Maryland, to be presented to the next legislature.

Dr. Welch, in continuing the discussion on typhoid fever, thought it was important to study the cases that differed from the usual forms. Much harm had been done by the text books by their descriptions of this disease. There are cases without the usually noted symptoms and cases with them. The cases of constipated typhoid fever are by no means the most favorable. Some cases assume the disguise of Bright's disease. The continued fever seems to be the symptom most common to all types. Harm has been done by setting up the type of typho malarial. The two diseases may be combined, but not often. Such a term is used to cover up the ignorance of the physician. We have means of recognizing malaria by examining the blood. If the malarial organisms are present we have malaria, if they are absent then we have no malaria. Typhoid fever is a disease which the physician should have in mind whenever he is called to attend a case of continued fever. He then related a case of walking typhoid fever. The patient had simply complained of sore throat, and had gone nearly every day to his physician. One day, on leaving the office, he fell dead on the street. It is a tricky disease and may assume all sorts of disguises. It is a novel thing to hear the ground hypothesis advocated in this country at the present day. The drinking-water is so generally considered the cause, especially in the opinion of Americans and English, that the ground hypothesis is in the back ground. Pettenkofer, who is a hygienist in the strictest sense of the term, is the leader of the ground hypothesis, while the bacteriological school of Koch is a strong adherent to the drinking-water theory. Typhoid fever may originate in various ways.

It generally comes from drinking-water, but it may not be impossible for it to develop in the way Dr. Anderson has said. Uffelmann found that it lived in the earth a year. The typhoid bacillus does not form spores, but it is very resistent. It may be taken in with the dust. The ground hypothesis cannot be denied entirely. Uncooked food may possibly cause it. Impure water may infect without being drunk; it may contaminate the vessels in washing them. It is well known that milk will cause the disease. The bacillus does not get in from sewer gas, but families returning to a house that has been closed for a long time may get the disease from the fact that the water in the drain and water closet pipes has evaporated, and any dried matter in these pipes, containing, among other things, the typhoid bacillus, may be wafted into the house by backward currents of air and cause the disease. In such cases the place just left, usually a summer resort, is blamed. In Munich the introduction of good water had no effect, but improvement of the drainage caused the disease to disappear at once. In Hamburg the reverse was true. The typhoid bacillus is not choice in what it eats. It will grow on almost anything. The fact that this bacillus grows readily in milk is no reason why we should deprive our patients of milk. As the bacillus will grow on almost anything, we should have to starve our patients in order to protect them. Besides, it is not so much keeping the organism from getting into the body, as to keep the body strong enough to throw off attacks of the bacillus. There is no substance which contains as much nutritive matter as milk, and nothing is better than it in typhoid fever.

Dr. E. E. Stonestreet, of Rockville, said that he had always thought that water was at fault in typhoid fever, and mentioned several cases of his own. This paper was further discussed by Drs. C. L. G. Anderson, of Hagerstown, Hines, Ashby and others.

TUESDAY, NOVEMBER 18—SECOND DAY.

Dr. T. A. Ashby then read a paper on

APPENDICITIS IN THE FEMALE, WITH REPORT OF TWO CASES.

He thought that this trouble occurred frequently in the female when it was not recognized, because the pus escaped by the vagina or in other ways. He related two cases.

Dr. Welch said that he had had some little experience in this disease, and thought that Dr. Ashby had called our attention to a very interesting subject, one little investigated, and this paper should prove an incentive to further investigation. The reason it is supposed to be so much more common in the male than in the female is because statistics are not properly collected. This is difficult. Proportionately there are more males than females in hospital, but like cancer of the stomach it is no more common in males than in females. There are special causative differences in the two sexes. One case which he had seen at the hospital was one of extra-uterine pregnancy. It was tubal. The diagnosis had not been made before she entered the hospital. The third week the sac ruptured into the peritoneal cavity and there was profuse hæmorrhage. The patient was better in a week. The diagnosis was made by withdrawing with a sterilized needle, a little fluid from the peritoneal cavity, and this fluid, which was blood, was found to be a pure culture of the bacillus coli communis. This showed a perforation of the intestinal canal, for how else could this organism have got in? The diagnosis was confirmed subsequently. This was the only thing about the case that led to a suspicion of appendicitis. An operation was decided on and laparotomy was performed. As soon as the peritoneal cavity was opened the blood spurted out seven inches high and three inches thick. The patient died almost at once. The autopsy showed an appendicitis and diffuse peritonitis. There had been a tubal pregnancy on the right side, which had ruptured. The diagnosis was made with the microscope. The appendix was adherent to the sac on the right side, and this is probable. It is probable that the appendix was ruptured in rupture of the sac. This is interesting, the diagnosis resting on the bacteriological examination, and the sudden death. The patient had shortly before had a hæmorrhage into the peritoneal cavity; the tension was excessive, which compressed all the viscera and the blood vessels. This is different from the collection of an ascitic fluid, because that is a gradual accumulation and the vessels have time to accustom themselves to the change. The volume of blood in this case was diminished by the hæmorrhage. The abdominal vessels can contain all the blood of the body, and in this operation, the pressure being suddenly let up, the blood was drawn from all other parts of the body by suction and the circulation could not be kept up. In these cases salt solution injected into the blood vessels does as much good as blood, and is not so dangerous. This patient died of "hæmorrhage into her own vessels."

A still more interesting case was that of a negress, aged about 21, married three years, had had two miscarriages, and developed during the last six months great pain and weakness in the back and side, and leucorrhœa. She was not incapacitated for work. She came into hospital. Examination showed that the cervix was low down and enlarged, os patulous. On the left side was a fluctuating mass as large as a lemon; on the right there was nothing. Diagnosis, pyosalpinx of the left side. Laparatomy was

performed and the left ovary and tube removed. The fimbriated extremity was obliterated, ovary not involved. On the right there was no pyosalpinx, but evidences of disease. The contents of the right Fallopian tube were muco-purulent. The vermiform appendix was adherent to the right tube. A culture made from the pus in the left tube was negative and sterile. This is the usual result, and it is surprising. These are gonorrhœal, and later on the organism disappears; still it does not grow in the usual culture media, so that when we find such a case where there is no growth, we consider it gonorrhœal. He made cultures from the right Fallopian tube and found small cultures; they were the streptococcus pyogenes, the most virulent of the pus-producing organisms. He thought this was a case where the inflamed vermiform appendix had set up by adhesion a salpingitis. This is another cause added to the list of causes of this trouble. The finding of the streptococcus makes the prognosis worse than if other forms were found. It is the organism of puerperal fever and septicæmia. This patient was isolated and a drainage tube was not inserted, as he considered it a source of danger. The temperature went up to 104°, and she died soon after the operation. The autopsy showed a duodenal ulcer, an unexpected complication. There may be a relation between the ulcer and this case; he had seen three others like it, but could not trace the connection.

Dr. Robert T. Wilson, of Baltimore, then read a paper on

LAPAROTOMY FOR REMOVAL OF A PURULENT TUMOR OF THE RIGHT OVARY.

This was not a suppurating cystoma of the ovary, but an abscess *per se*. The tumor was as large as an infant's head. He put on the clamp, cut it off, applied Monsel's solution, put back the stump, and closed up the wound with antiseptic precautions. In order to give good drainage, he put in a tube. He thought it was important, after such operations, either to put in a drainage tube or an iodoform-gauze tent. The patient made a good recovery.

Dr. Ashby said it was interesting because it showed the difficulty in diagnosing these cases. He had had several such cases, but in none was the ovary so large.

Dr. Welch said that abscess of the ovary was rare, as Dr. Wilson had said. He had seen a few cases, but none so large as this. Suppurating disorders are caused by microörganisms, and it is difficult for organisms to get into the ovarian structure. In pelvic peritonitis they do not have to penetrate. The tunica of the ovary is so thick that organisms do not readily penetrate it. The different tissues react more or less readily to the invasion of bacteria, but the stroma of the ovary is not prone to suppurate. He mentioned a case of ovarian abscess from abscess of the rectum, and recalled a case of genuine ovarian abscess. They are not so very uncommon, nor are they so common. It is not easy to tell what we have when the abscess gets as large as the one mentioned, and be sure that it is an abscess of the ovary. The ovary may be depressed and covered by the abscess.

Dr. Wilson emphasized the importance of putting in a drainage tube or an iodoform tent to facilitate the escape of the discharge. He also used a large quantity of boiled water to clean out the cavity, and left a little to prevent clotting of the blood.

Dr. Welch said it was very proper to use a drainage tube in this case, where there was little chance of getting union by first intention; but if there were a chance of union by primary intention, a drainage tube should not be inserted.

Dr. William B. Canfield, of Baltimore, then read a paper on

OCCUPATION AND DISEASE; WITH SPECIAL REFERENCE TO THE CONNECTION BETWEEN THE INHALATION OF DUST AND PULMONARY DISEASE.

The substance of this paper was to show the dangers of inhaling dust in mills, mines, factories and other closed places where dust is present in excessive amount. This dust is dangerous because of its amount, its poisonous nature, or because it may make a way in the lungs for the invasion of the bacillus tuberculosis and other organisms. He suggested proper ventilation and means to carry off the dust.

Dr. Preston said that the class of cases he had seen had been in stone-cutters. He thought the trouble persisted even after the work stopped. He related a case of inhalation from grinding drugs. It had both a mechanical and poisonous effect. This is important, particularly where manufacturing is going on. We should be servitors of the public health. He had seen many cases of lead poisoning occurring in men employed in the same place of business. With much difficulty on his part, and with great reluctance on the part of the owners of the yard, he found that the powder used to polish the stone contained lead, and this was inhaled in polishing, and caused the lead symptoms.

Dr. Welch had seen cases of anthrax from the dust in handling hides and sheep skin. There were intestinal mycoses. He had seen cases of siderosis in Saxony. Dr. Canfield is right in saying that we must consider each kind of dust by itself. The bronchial glands form a filter, but the dust may be carried to other parts of the body. An emphysematous condition tends to let the dust get into the lungs more easily than normal.

Dr. Canfield said he wished to emphasize the

dangers of dust inhalation both on account of the mechanical effect of the dust, and also because the crystalline dust tends to make a way for the entrance of organisms. It was also well to note that cases of pulmonary tuberculosis contracted tended to recovery when the case was removed from the dust.

Dr. J. E. Michael, of Baltimore, read a paper entitled

A CASE ILLUSTRATING THE DIAGNOSIS OF EXTRA-UTERINE PREGNANCY, AND THE DIFFICULTY OF PRODUCING ABORTION.

He related the case of a woman, aged 22, unmarried, who had been treated for suppression of menses, first by drugs, later locally, in view of a muco-purulent discharge from the cervix. Local treatment in applications to the uterine cavity of Churchill's tincture. This was done fifteen times, the applicator having been passed 4½ inches. Dr. Michael diagnosed pregnancy in a sharply anteflexed uterus. Natural labor proved the correctness of the diagnosis.

Dr. Stone, of Washington, in discussing extra-uterine pregnancy, said we should know more of the diagnosis of this condition. He related several cases, and asked where this pregnancy occurred. A rupture through the tube into the broad ligament was called an interstitial pregnancy.

Dr. Welch related a case of a couple who had been married fifteen years without children, when the wife became pregnant. It was supposed to be an ordinary labor, and everything went on well, when she was suddenly taken with pain, collapse, and symptoms of internal hæmorrhage. As she was the wife of a well-known physician, many were called in. She passed some material by the vagina, and some thought it was a case of miscarriage, while others (Thomas and Lusk) said it was extra-uterine pregnancy. As it was easy to see the chorionic villi under the microscope, Dr. Welch, who was at that time just beginning his pathological studies, examined it and found decidual matter, but no chorionic villi, thus proving that it was a case of extra-uterine pregnancy. This shows the practical use of the microscope.

Dr. Stone asked if it was usual for hæmorrhage to occur at the fourth month outside of the sac. After a fœtus is two weeks or a month old, he did not know what caused a hæmorrhage, and from what artery it came. There was no rupture of the sac.

Dr. Welch said the rupture of the tubal sac was common. He had never seen such a case where hæmorrhage occurred and there was no rupture.

Dr. Winslow said he had had two cases fifteen years ago. Hæmorrhage is usually the result of rupture of the sac; as the child grows, the tube is not large enough to receive it, and as it cannot expand, it ruptures. The fœtus gets into the peritoneal cavity, and is soon absorbed and is not found. This is well known.

Dr. Michael said he had not expected the discussion to take this turn, but he was very glad of it. He related several cases, and said he thought the clinical aid was generally sufficiently clear without the aid of the microscope.

Dr. Welch said it was interesting to observe what a wide field the discussion on extra uterine pregnancy and hæmatocele took now from what it did fifteen years ago.

Dr. Michael asked if it was always a ruptured pregnancy, or were there other conditions that could produce it.

Dr. Welch thought that a very large percentage of pelvic hæmatoceles were cases of extra-uterine pregnancy.

Dr. A. K. Bond, of Baltimore, then read a paper on

NOTES ON THE USE OF CODEINE.

He had used it in gastric irritation by the mouth and rectum, in the early cough and sleeplessness of the aged and in phthisis. The advantages were there were no gastric disturbances, no constipation, no increase of dose necessary, no habit formed, in fact no interruption in the harmony of the system.

Dr. Canfield said he had used codeine principally in diseases of the respiratory tracts. He had found it better than morphia in some cases, but it was often not powerful enough in the last stages of phthisis, where it made no difference whether a habit was formed or not.

Dr. Stone asked if it produced diaphoresis.

Dr. Bond had not heard of it. He thought the necessity of increasing the dose of morphia was caused by the disordered digestion.

Dr. Edward Anderson said his objections to the use of morphia were the irritation of the skin. It dries up the secretions and causes indigestion, nausea the next day.

Dr. Robert T. Wilson had used codeine for twelve years, and was always much pleased with it.

Dr. Randolph Winslow, of Baltimore, read a paper entitled

A CASE OF ELEPHANTIASIS OF THE SCROTUM.

His father died of meningitis. His mother of phthisis, and he was the last of six children, who had all died of phthisis. About three years ago his scrotum began to enlarge and his penis was almost in it. His virile power was unimpaired. He had never lived in tropical countries. He was given the iodide of potash with no effect. The scrotum was excised and testicles saved. The result was good. This disease is rare in

this country. He could not find the filaria in his blood.

Dr. Welch had seen two cases, and in neither could he find the filaria. He does not think the elephantiasis of Baltimore is parasitic.

Dr. Charles E. Stone, of Rockville, then read a paper on the

EARLY DIAGNOSIS AND OPERATION IN OSTEO-SARCOMA OF THE LOWER BONES.

He spoke of the importance of an early diagnosis and related three cases in his own practice where delay had done great harm, simply because he could not get any consultant to agree to an operation until too late.

This was discussed by Dr. J. W. Chambers of Baltimore.

Dr. Stonestreet related a case of a man 60 years old who broke his femur while sitting on the edge of the bed, just as he was in the act of lifting his feet off the floor.

Dr. Welch did not think that injury was ever the cause of a genuine tumor unless there was a predisposition behind it. He believes in the inheritance of embryonic remnants, and thought the traumatism was only the exciting cause.

Dr. Robert L. Randolph then made a *Report of Fifty Consecutive Operations for Cataract.* This was discussed by Drs. Herbert Harlan, of Baltimore, and Muncaster and E. O. Belty, of Washington.

American Electro-Therapeutic Association.

First Annual Meeting of the Electro-Therapeutic Association, held in Philadelphia, September 24, 25 and 26, 1891.

(*Continued from page 934.*)

Dr. Robert Newman, New York, read a paper on

ELECTRICITY IN CARCINOMA.

The object of this paper is to give the different ways in which electricity has been used in the treatment of cancer, and to show that cures have been reported which cannot be doubted. Four different methods have been used:

1, Galvanism; 2, electrolysis; 3, galvano-cautery; 4, a combination method, consisting of two of the former.

1. *Galvanism.*—This has been applied externally with pads or sponge electrodes, and (the interrupted current) with needles.

The external application by the galvanic (constant) current with two sponge electrodes to the skin, on or near the tumor, has not met with success, and it seems has only stimulated the cancer cells to greater proliferation, and has thereby hastened the end. Author is not acquainted with a successful case by external application of galvanism.

The second method, by the interrupted galvanic current with needles, deserves more earnest consideration. It was inaugurated recently by Dr. J. Inglis Parsons, of London, who calls it "The arrest of growth in cancer by the interrupted voltaic current."

2. *Treatment by Electrolysis*—In the treatment of cancer by electricity, electrolysis has been mostly used, and is best known. It differs widely from the former method of galvanism, which, by a strong mechanical action, is expected to destroy the cancer, just as the alternating strong current kills in electrocution. Electrolysis, on the other hand, either destroys, causing decomposition by its chemical action, or causes absorption, according to the strength of the current employed. The art of applying electrolysis successfully consists in using the correct strength of electric current, applying the respective poles in the right place, selecting the size, shape and material of the electrode, and regulating the duration and intervals of séances.

There are two methods in vogue, one causing destruction, the other absorption. A mild current can effect absorption only; a strength from 5 to 30 milliampères may be used, and even more, according to work done. A strong current, from 25 and upwards to even 200 milliampères (and some operators have used even more) will destroy tissues to such a degree that the tumor may slough off as a dead mass. A good rule is to apply the current not stronger than necessary to accomplish the object.

INTERPOLAR ACTION.

It is undecided whether there is an interpolar electrolysis. It is only certain that the decomposition by electrolysis is most at and around the terminus of the poles. From experiments made by the author, it seems that the electrolytic action extends around the needle in a radius of 1¼ to 1½ inches.

The conclusions are, that electrolysis can destroy cancer cells, and that electrolysis causes specific decomposition at the pole and within a radius of 1 to ½ inches. Therefore, if needles are inserted in a tumor at a distance of 2½ inches, it may be expected that the electrolysis acts in such a manner that no interstices are left between the needles which will retain the life of cancer cells. According to such conclusions, author has operated principally by two methods. If an absorption by electrolysis was intended, the whole tumor was electrolyzed in sections with needles connected with the negative pole, one, two or more needles in the tumor at a time, while the positive pole was applied as a large pad outside on the cuticle or near the tumor.

The second method is by having needles from both poles, the positive pole (a single needle) in the centre of the tumor; the negative needle or

needles at the circumference or even outside, but near the margin of the tumor in a manner, and at the distance mentioned before. This was applied for the destruction of the diseased mass, to be sloughed off. In the first method by absorption weak currents were used and no anæsthetic, as no pain was caused.

Reports of cures of cancer by electrolysis have been made by Neftel, Beard and Rockwell, Mussey, Gunning, Ernest Wende and the author. Some photographs of Dr. Wende's cases were exhibited.

Author commenced, in 1874, the electrolysis treatment in cancer, and has had considerable experience with these maladies. The results varied; some were failures, some patient's life was prolonged, and there were also cures, some patients remaining well without any sign of recurrence of the growth for many years. It would take too much time to relate these cases here in detail; only one case has been published, the specimen being presented to the New York Pathological Society and examined by the Society's committee on microscopy, and other experts. Here are some microscopical slides and drawings belonging to this case, for the inspection of the members of our Association, which has and still can prove that the case was carcinoma beyond any doubt.

The case mentioned under the former chapter of the Parson's method, was treated by the author entirely by electrolysis, and shows what benefit was given thereby even in an entirely hopeless case, and it is not the end, as the patient still lives. A case of epithelioma of the face treated by electrolysis in which no recurrence of the disease occurred in seven years, ought to be counted as cured.

3. *Treatment of Cancer by Galvano-Cautery*, has been done by many; but it seems that Dr. J. Byrne of Brooklyn has had the greatest experience and success. Out of 367 cases thus treated, there was no return of the disease in two to eight years in 153 cases.

4. *Treatment by a Combination*—This consists of an application of two of the former methods, mostly combining the application of the electrolytic and the galvano-caustic effect of the battery in the same case.

Cancer grafting has been recently practiced, and from such experience and reports it may be concluded, that cancer in such cases had been exterminated, and therefore that cancer can be cured.

In what Manner is Electricity Expected to Cure Cancer.

The entire removal of the cancer cells ought to cure cancer, no matter what method is used. Now the question arises, how is this effected by the use of electricity. There are several theories and methods.

1. Strong currents of galvanism are expected to destroy the cancer cells by a mechanical action.

2. A removal of cancerous tumors by extirpation (amputation) is effected by the galvano-cautery.

3. Electrolysis by a mild current acts as an absorption by chemical decomposition.

4. Electrolysis with strong currents acts as a destruction. The strong current will destroy the malignant tumor, leaving a dead mass, which will suppurate and finally slough off, leaving a healthy surface, healing by granulations.

Whatever method is used, it must be done thoroughly and systematically, removing all cancerous cells. Success can only be expected in the earlier stages of the disease, when the malady is local and the malignant mass is concentrated in one small tumor. If the cancer cells are dispersed in different parts of the body, scattered, and the disease has advanced, success cannot be expected.

The Advantage of Electricity Against Other Methods.

1. The facility with which electricity is applied, some methods can be done without an assistant and without an anæsthetic.

2 The operations are free from danger.

3. It causes no shock after the operation.

4. It is easier to get at the whole of the disease in an early stage, than by any other means.

5. It can be used in anatomical dangerous places, beyond the reach of the knife, and the horror of the knife is avoided.

6. It delays the growth, prolongs life and benefits the patient, even if it does not always cure.

7. The patient is not necessarily confined to his bed or house.

8. The operation does not cause pyæmia or septicæmia.

9. There is no danger of hæmorrhage, but it controls hæmorrhage.

10. There is more chance of a cure and better healing after the operation.

11. It always allays pain.

In the foregoing article the details of cases have been omitted; it would have made it too long; it has not been written for the general practitioner.

The object was to report the different electric methods which have been used in the treatment of cancer, before the meeting of experts in electricity, for discussion and improvement.

Dr. Hutchinson:—I am very glad to have listened to Dr. Newman's paper. I have personally known a great many of his cases.

So far as cancer is concerned we have been in touch many years. I have operated on sixteen cases myself. Two are still living. One a case of epithelioma of the lower lip removed fourteen years ago. He has not had any return of it and

is in good health at present. The other is a woman from whom I removed a breast and her two labia majora, and after twelve years she is in good health. These cases are both a matter of record.

I think cancer is curable by galvanism, and I think in some cases where it has become constitutional they are so to some extent; that is, where cancer has become infiltrated through the system by local tumors, the removal of those tumors and taking away of the irritation has resulted in final cure, or at least in great relief.

Dr. Bigelow: In one of the late numbers of a French journal there are some notes upon epithelioma and keloids which have been treated by the same method as that of Dr. Newman. The writer also has under observation now three other cases, and if after the lapse of two or three years he will know whether the lymphatic system has absorbed any of the virus, then we will be able to say whether or not the cases have been cured. We have two cases now which will be published shortly.

Dr. Hayd: Since my name is alluded to in Dr. Newman's paper I gladly arise to say what I know in reference to these cases.

There is no doubt whatever that in the case named the person was cured. He is the official stenographer of the court, and had had it several years. He had been treated by several methods. The growth was twice removed by the knife and twice he went to so-called cancer specialists and had some caustic applied; in all probability a preparation of arsenic. He was also treated with cod-liver oil applied locally, as it was thought by some to be a case of lupus. I saw the man last week, who came to me desiring to renew an insurance policy, and I am pleased to be able to tell you there were no nodules or tubercles and no ulceration. The sore, which had been unsightly two years ago, has now healed, and in place of an ugly cicatrix he has a clear face and scarcely any scar to be seen.

Dr. Wend has done a great deal of work in this direction, and his reports can be accepted as from a well-qualified man fully competent to express an opinion upon this subject. He is professor of the diseases of the skin in the Buffalo Medical College, and whatever he writes is written with honesty of word and intention, and these cases I can verify, as I have seen them. None of you, if you saw this case now, would have any idea that he had had any malignant ulceration; it is not noticeable.

Dr. Walling: I have had a little experience in these cancer growths. A case in which Dr. Massey kindly assisted me in Parson's method, and which was referred to by Professor Goodman, the patient had lost his hand from the growth some years ago, and now the growth had appeared in the left axilla. The whole left side was involved. It was of a dark purplish color and he was suffering a very great deal of pain, and I advised him to have the arm taken off at the shoulder, but he preferred to have the electrical treatment. I used Parson's method and 600 milliampères with repeated alternations of current. On the back side of the arm was an ulcer the size of a walnut, which had broken out from degeneration. I thrust eight needles—four platinum and four steel—into the growth. Inadvertently the current was run up to one ampère and the needles dropped out. The consequence was we had a deep slough. The tissue under the positive needles was almost like cartilage and I was afraid I would not be able to heal it up, and that it would degenerate below and I would have a bad case; however, I took the negative carbon and acted upon the apparently cartilaginous tissue and cleaned it all out from time to time, and it healed up entirely notwithstanding the continued irritation of the parts, making application of the positive current until it was all cleaned up, and although the result of this operation did not succeed as we had hoped, it so checked the growth that I repeated the operation up to fifty milliampères with the result of checking the growth for a long time, but as it was deeply seated in the axilla, we could not reach it on account of the larger vessels. The ulcer was treated with carbon electrodes passing deeply in and keeping it clean, and syringing it with an antisceptic, as well as keeping it covered with boracic acid and cotton; finally it ulcerated through a large artery and the man died.

Another case which came under my care in the Medico Chirurgical Hospital was a case of epithelioma of the face, and this was cleaned out by two operations. It was acted upon by the negative needles, using fifteen milliampères without an anæsthetic, and by acting on the surface with the negative carbon with rather deep action. The surface healed over in about three weeks' time. I have not seen the case for six months, but I believe those things can be cured if taken in time.

Dr. Morton: I do not like to keep my seat without thanking the author for his excellent handling of the subject. I have had no experience whatever in treating cancer with electricity, but I recall that his paper is a resumé of the former operations, and the methods he outlined we leave out of view, which I imagine he views as an amputation procedure. It opens up such a large volume of fact and speculation that we cannot go into it; but it involves this treatment of cancer and cancer growth by the direct action of the needle, and involves the electrical treatment. I hardly see how you can say that the galvano-caustic treatment is not purely electrical as well as a chemical treatment. The very fact that you use a sufficient current to produce an electrolytic

product at the point of the needle is the best evidence in the world why you are using sufficient current to produce those profounder effects which you would like to have gotten with the galvano-caustic treatment. When you use the galvano-caustic and galvano cautery treatment you cannot separate them.

The peculiar part of the whole thing is, as I understand from the reader's paper, that electric energy has a peculiar selective power to act upon the cancer cells and not upon the healthy cells, otherwise I cannot see how a distinction can be drawn between the galvanic treatment and the knife. If the galvanic treatment has this selective capacity, that is the point that should be made clear. I think I should like to have heard a little more discussion about the varieties of cancer. It seems to me that a great many of the results are in epithelioma, and I think that dermatologists claim good results from other treatments than electricity. Dr. Fox showed me good results from other treatments.

Dr. Massey: I must join Dr. Morton in commending the paper as not only careful, but very moderate in its statements, and we should be careful of promise in such desperate diseases. We want to get at the facts in an exact manner when we have to deal with one of the worst scourges of the human race, and one, so far, which has been apparently entirely resistent to medical treatment.

It was only yesterday, at a meeting of the American Gynecological Society, that a discussion occurred on hysterectomy for carcinoma of the uterus, and I was struck with the failure of surgery also to accomplish striking results. Recurrences seem to be alluded to often in speaking of cases, unless they were distinctly minute in their seat at the time of operation, that it must be regarded as almost an entire failure. The question of the cautery does not come into consideration here, it being merely a thermic knife, and thermic destruction of tissue. To my mind the other question, of a possible value of electricity in killing the cancer germs themselves, is of far greater importance. Allusion has been made to the question of selective affinity to cancer cells. I scarcely think that is a good way to put it, to describe what I regard as a fact.

The cancer cell is a highly liquid infiltration of more solid tissue—I now allude to epithelioma—and in addition to that fact, presents another reason for lessened resistance in that lowly organized tissue. I think it can be well demonstrated that more current will traverse a cancer than a non-cancerous tissue. Then again, cancerous tissue is possessed of low vitality, and probably therein lies the greatest power we have to electrically kill it. Surrounded as it is by more highly organized tissue, it cannot resist the onset of a strong current or strong chemical action, and hence it may be amenable. If amenable, how much better is such a practice for good, for the cancerous infiltration is followed back into its habitat, or more correctly stated, back through the lymphatic tracks that lead into the more healthy tissue.

My own experience in this subject has been mainly with epithelioma of the cervix. I have used methods different from any mentioned. I am not sure whether they are entirely novel. It is simply a direct application of a strong current on a limited surface, of the carbon positive pole directly to the diseased tissue. In that way, the parts being free from excessive sensation, I accomplish the ready destruction of cancerous tissue. You can at once accomplish the immediate cessation of bleeding which annoys and weakens the patient. I have in one application, with less than 100 milliampères, arrested a hæmorrhage which had lasted a year, and the hæmorrhages have never recurred. It arrests hæmorrhage quickly, and the cancerous tissue will afterwards come away, under the influence of antiseptic douches, in white crumbs, and leave a clear, hard excavation where the cancer had been. In one old case in which there was not sufficient treatment, there was no question about the prevalence of cancer in other parts of the body. Excavation finally resulted where the cancer had been which would admit two or three fingers, which became lined with a healthy material. This was curetted with the idea of seeing if any cancer cells were left, and Dr. Crozier Griffith, who is one of our best microscopists, decided there was not. This person finally died of cancer of the liver. These cases have been unfortunate in being treated at a period of the disease when they could not be benefited, but I am sure that if the cases are taken early, cure can be accomplished.

I assisted Dr. Walling, as he relates, in using the Inglis-Parsons method in the case related by him, and I think we used it quite strictly, but the case, as he has said, was most unfavorable, as it had reached the bones before we treated it, but it suffices to show the value of the Parsons method. The accidental use of 1,000 milliampères was on account of a too close apposition of the needles.

Dr. Morton: Before taking my seat, I would like to ask the author of the paper as to whether the effect he obtained was due to actual electrolytic decomposition by the chemical products of the electrical current; in other words, how much is due to electrolysis and how much to the caustic effect.

Dr. Blackwood: The remark just made, that the electrical current has a greater effect on cancerous tissue than upon the normal, is, I think, correct. In a case which I saw some time ago, where a surgeon attempted to persuade the patient to go under an operation, but which she at

that time refused, and upon whom I was permitted to use the electric current for several applications, the uterus was bound down and she was very uncomfortable, and it was difficult to get the needles in properly. I noticed that the action was very destructive on the cancerous tissue and not upon the other tissue. But finally the surgeon obtained more influence upon her than I could bring to bear, operated upon her and buried her.

Dr. Waite: I saw one case of Dr. Wende. He used after his ordinary treatment the faradic current, which he thought prevented the case from going back, and he usually makes the application fifteen minutes after the treatment with the needle.

Dr. Newman: In summing up, the only thing which I have to do is to answer the question of Dr. Morton.

It is true I never thought that the galvanic cautery was strictly a chemical action, but at the same time I think it applies to electricity, so that I gave it a distinct division in the treatment. While it is in the line of surgical action, I think the electricity has something to do with it, but how much of either it is impossible for me to say.

The other question, to say how much in this treatment is due to electricity *per se*, or electrolysis, I do not feel competent to say—I do not feel competent to speak, as I am biased, as I am enthusiastic about it. I am known to attribute the effect to chemical decomposition, and I believe that the principal action by which we do this, or get these effects, in the cure of cancer, is by electrolysis and its chemical decomposition. This chemical decomposition may be of a twofold character; the weaker is an absorbent, and the stronger a destructive. It is certain that the electric action has a good effect. I have on purpose not given any opinion of my own.

I have given the method of Dr. Parsons, which I believe in some cases to be impossible to use. Imagine the application of 600 milliampères on the left side near the par-vagus, what would become of the patient? I do not feel competent to express an opinion as to this method, either praising or condemning it, without more experience.

Electricity has certainly an action. Some think it is a plaything, but it has killed many patients.

To go further and deeper into the subject as suggested by Dr. Morton, I feel incompetent to do. The material on hand was so overwhelming when I commenced to write my paper, that I had considerable difficulty to bring my paper within compass, and it is much larger now than I should have made it, and I tender to you all my sincere thanks for your careful consideration.

(*To be continued.*)

NEW YORK ACADEMY OF MEDICINE.

Section on Orthopædic Surgery.

Stated Meeting, November 20th, 1891.

SAMUEL KETCH, M.D., CHAIRMAN.

A CONVENIENT DRESSING FOR CASES OF TORTICOLLIS AFTER OPERATION.

Dr. R. H. Sayre presented a boy upon whom he had operated twelve days before, for the relief of torticollis. The case illustrated the form of dressing which he had found very useful after such operations. It consists of a plaster of Paris jacket and a jury-mast, the upper part of which has a fan-shaped expansion fitting the occiput. After a thorough subcutaneous sub-division of the sternal and clavicular attachments of the muscle, the boy was allowed to come out of the ether, and then a tightly fitting foot-ball cap was pulled down over the ears and covered with a plaster bandage, which also included the expanded portion of the jury-mast. In applying this dressing, care was taken to place the head in the normal position. The mechanical appliances usually employed for the after-treatment of these cases is difficult and tedious to make, and must be made for each patient, and even then are hard to keep in position.

Dr. A. M. Phelps considered this the most efficient dressing of its kind which he had seen.

Dr. N. M. Shaffer did not share the opinion that the mechanical appliances ordinarily employed were complex, and difficult of application; on the contrary, he thought they possessed a distinct advantage over this fixed plaster dressing, as they allowed of frequent but slight changes of position, and a gradual restoration to the normal position. The case just presented, did not show a complete correction of the deformity. In two recent cases of club-foot in which he had endeavored to fully correct the deformity at once, too long a tendon was the result.

Dr. L. A. Sayre said that he had employed this dressing for the last ten years to the exclusion of all others, and had found it more efficient than any he had previously tried. The principle of practice laid down by the previous speaker, he considered erroneous; immediate and full correction of the deformity was much better than tormenting the patient at short intervals by frequent stretchings of partly adherent tendons. If proper judgment were exercised, the tendon should not be too long.

Dr. Phelps said he wished to heartily endorse the principle laid down by Dr. Sayre. The English method of gradually reducing the deformity by stretching, was, in his opinion, a fruitful source of non-union of tendons, and of their adhering to their sheaths. He had never had a single case of non-union of tendons, and he always divided them thoroughly and super-corrected the deformity at once.

Dr. R. H. Sayre, in closing the discussion, said that in certain cases of wry-neck where stretching was preferable to tenotomy, the Archimedean screw and other mechanical appliances usually employed, were very effective, but if the tissue be contractured, and hence required tenotomy, he thought the dressings he had just shown would be found to give more perfect fixation of the head. Immediately after the tenotomy, a certain amount of material is poured out between the ends of the divided tendon, and a large gap can be filled up as easily as a small one. As the amount of this exudation neither increases or diminishes after the first effusion, it follows that if the position were not fully corrected at the time of the operation, subsequent stretching can only produce elongation of the tendon at the expense of its diameter.

Dr. Halsted Myers presented a case of

LUMBAR POTT'S DISEASE,

with a very large abscess occupying the right side of the abdomen from the ribs to the pelvic brim, extending nearly to the median line in front.

The boy's general health was excellent. He was fat and ruddy. His bowels were regular. There was no albumen or casts in his urine. There was no enlargement of the liver. His temperature varied between 98° and 99° F.

The patient was presented to illustrate a not small class of cases, and to prove that very large cold abscesses can and do exist without causing any disturbance of the general health.

Dr. Thomas H. Manley thought the lesson to be learned from such a case, was that extreme conservatism should be exercised in the treatment of abscesses where they do not give rise to pronounced constitutional symptoms.

The Chairman was of the opinion that one of the most important lessons which the orthopædic surgeons had impressed upon the general surgeons, was that many cases of abscess disappear under proper mechanical and constitutional treatment. He would even go further, and say that many abscesses were prevented by such treatment, and that as these methods more nearly approached perfection, abscesses would be less frequent complications of Pott's disease. While admitting that at times it was very difficult to decide as to the advisability of operative interference, he was personally of the opinion that in cases of joint or spinal disease, there was less risk from the non-operative treatment, for the reason that pus in a closed cavity is much less dangerous than after the cavity has been exposed to the air.

Dr. Phelps said that in the case just presented, the abscess was probably really a cavity filled with tubercular material, and free from the germs of suppuration; but while such "cold abscesses" might remain for a long time without doing any harm, they were liable sooner or later to become infected with pyogenic germs, and when this occurred, "burrowing" would begin, and the patient would exhibit all the usual symptoms of sepsis. As there was no means of telling when such infection would occur, he thought it wiser to operate on all of these cases. He felt perfectly confident that he could operate on all such cases without any danger from sepsis, and he had never seen any deaths attributable to such operation in his hands.

Dr. Shaffer said that this theory sounded very nicely, but a large hospital experience extending over a period of twenty-eight years, during which time he had tried various methods of treating these abscesses, had taught him to regard them as of no great importance, and he would not consent to opening these abscesses unless there were severe or prolonged constitutional symptoms due to the abscess. If we were wise enough to let these abscesses alone, the patients would usually do better than if they were opened.

Dr. R. H. Sayre said that his experience with these abscesses had been quite different from that of the previous speaker, and he looked upon them as representing a serious phase of the disease. Where the abscess cavity did not admit of safe and thorough evacuation of its contents, so that healing might proceed uninterruptedly, it was better not to operate, unless there was serious constitutional disturbance. Letting all cases of abscess alone was as harmful practice as opening every abscess which presented itself.

A CASE OF TALIPES EQUINO-VARUS SHOWING THE IMPROVED LATERAL TRACTION APPARATUS.

Dr. N. M. Shaffer said that the development of this traction apparatus had been attended by much experimentation and annoyance, and during this period, there had been naturally a number of failures. A large number of cases of pure equinus which would ordinarily be condemned to tenotomy, could undoubtedly be cured in this way, but in the more complex deformity, known as equino-varus, the mechanical conditions were much more intricate. The first two cases which he presented were intended to show the good results which had been obtained without the latest improvement, and the third one, to show the improved apparatus applied to the patient, as well as to exhibit the result of three month's treatment. In the older instrument, there were three movements, viz.: 1. One which put the foot in any position as regards the equinus; 2, one which threw the foot outwards as far as desired, and locked it there; and 3, one which drew the foot around into a valgus position. It had been found in cases which had been treated

by this apparatus, and were apparently cured, that there was inward rotation of the whole foot on a vertical axis, and the object of this latest improvement was to correct this defect. It consists in extending the apparatus up to a pelvic band, and introducing a fourth movement, by which the whole foot is turned on the vertical axis.

The girl whom he exhibited with this apparatus, had been admitted to the Orthopædic Hospital on August 27th, with such a severe type of double equino-varus, that he thought many would have advised operation. The four movements which he had described had been made "up to the point of toleration," and repeated many times a day. They were executed in the following order: 1. Bringing the foot up while the heel is held down; 2, throwing the foot outward and keeping it there; 3, turning the whole foot on a vertical axis; and 4, throwing the foot into a valgus position. While the third movement is being made, it is noticeable that the patella does not move. The results he had obtained with this new apparatus were remarkably quick and satisfactory.

A STUDY OF ONE OF THE ETIOLOGICAL FACTORS OF LATERAL CURVATURE OF THE SPINE.

Dr. Charles L. Scudder, of Boston, presented the results of an investigation into the seating of 3,500 school girls, with especial reference to the effect of poor seating upon spinal deformity.

Lateral curvature of the spine is in all probability due to several factors: 1, the superincumbent weight of the body falling upon a spine weakened either in bone, muscle, or ligament; and 2, held persistently out of the median antero-posterior plane of the body.

Dr. Scudder made a careful examination of the seating in schools, and found that faulty positions, one of the elements of the third etiological factor, are certainly induced because of the lack of adaption of seat to pupil and pupil to seat. How much of a factor in causing lateral curvature poor seating is, it is impossible to say, but that it plays an important part there can no longer be any doubt.

The author suggested that the present seating arrangements of schools be used to better purpose than hitherto, by arranging scholars more carefully in the room, and having careful supervision exercised by those in charge.

He then described the development of the adoption in the Boston Public Schools of the Swedish Gymnastic system, and regarded it as of highest importance as a measure likely to be somewhat preventive of spinal curvature induced by poor attitudes in sitting. This is to be brought about by no specialized gymnastics, but by general, central movements which shall tend to develop the whole child along the lines of his natural muscular development.

Dr. L. A. Sayre said that if proper attention were paid to the physical training of girls, there would be few cases of lateral curvature.

Dr. V. P. Gibney said that the paper reminded him of some observations he had made at one time in our public schools. In passing through the schools he had been struck with the frequent changes of position of the pupils, and he had concluded that faulty attitudes were not so potent a factor in this condition as he had previously imagined. He was, however, willing to admit that it was quite possible that weak children having once assumed a comfortable attitude, would be likely to maintain it long enough to be injured thereby.

Dr. Ramon Guiteras agreed with the author as to the great importance of the Swedish gymnastics in the training the bodies of young children. As to the matter of desks, he was happy to say that school desks and chairs had recently been invented by E. E. Hicks, a student of the University, which could readily be adapted to any height.

Dr. H. L. Taylor said that the author had shown indisputably the necessity for competent medical supervision of our public schools. As lateral curvature occurs rather more frequently among the children of the well-to do class, who as a rule, attend private schools where the seating of the children usually receives more careful consideration than in the public schools, and as this deformity also sometimes develops among children who have been entirely educated at home, he was not willing to admit that faulty school attitudes were very potent in producing the deformity in question. They undoubtedly do children harm, with the production of lateral curvature. The instinct of young children is to keep in motion, and one of the great faults in our system of education is the absence of frequent short recesses. A recess of five minutes between each recitation, especially if utilized for gymnastic exercises, would prove very beneficial, and he hoped the paper would receive that wide and thoughtful attention which would lead to the introduction of rational physical culture into our school life.

The Chairman said that his own impression was that no habit in itself, no matter how long continued, could produce an idiopathic rotary lateral curvature of the spine. Some years ago, he had written upon the etiology of this condition, especially in young children, and had called attention then to the fact that the curvature was present before the children assumed these faulty positions, or in other words, that the position was the result of the curvature, and not the cause. He was willing to admit, however, that a *curve* of the spine could be produced by a long continued bad position.

Dr. Scudder, in closing the discussion, said

that he recognized that among the many factors which entered into the causation of lateral curvature, three important ones were, the superincumbent weight of the body upon the spine, 1, weakened by a diseased condition of the bone, *e.g.*, rickets; 2, weakness of the muscles (not yet demonstrated); and 3, weakness of the ligaments. Although it was not yet known whether one or all are present in any given case, it was known that the superincumbent weight of the body falling upon a spine which is kept in the median plane of the body, causes only an antero-posterior curve. This was known both by demonstrations on the cadaver, and by observations on the living subject. But when the spine deviates from this median plane, a certain amount of lateral curvature results. His paper embodied a study of the effect of faulty positions on the body, and did not assert that faulty positions in themselves caused lateral curvature.

THE ANATOMY AND MECHANISM OF THE FOOT WITH SPECIAL REFERENCE TO TALIPES; AND THE EXHIBITION OF A SHOE FOR CLUB-FOOT.

A paper with this title was read by Dr. James E. Kelly. He indicated the relation of the progression of terrestrial animals to cyclical motion, likening that of bipeds to a unicycle in rapid motion, and a lateral bicycle, such as the "Otto," in slow motion, while a quadruped resembled an ordinary bicycle in rapid, and a quadricycle in slow motion. He indicated the relation of the pelvis to the "hub" or nave of a wheel, the thighs and legs to the spokes, and the feet to the rim or tire. Great economy was claimed in weight, space, labor, and nutrition by the substitution for the entire wheel, of two spokes, and the corresponding tire segments of feet which alternately assumed the functions of the numerous portions, each oscillating as a complex pendulum, and describing the brachistochrone or curve of the most rapid descent. He exhibited a model which reproduced the movements very accurately.

Dr. Kelly controverted the accepted description of the foot as consisting of antero-posterior and transverse arches, and demonstrated the fact that the two feet placed together constitute a dome or cupola, the entire margins of which rested on the ground, and consequently, one foot might be more properly termed a semi-dome. He proposed an original explanation of the advantages we derive from the outer toes being the shorter, in the fact that when the semi-dome revolved on its margin from the posterior to the inner anterior portion corresponding to the great toe, while the body moved forward, the consequence was that the ankle was bent outwards and placed in the most favorable position for clearing the inner side of the opposite foot when swinging forward to assume its anterior position. He dwelt on the nomenclature of talipes, and suggested the term "talipes anchylosis," for that form described by Dr. Schaffer as "non-deforming talipes." He entered into the mechanism of talipes more especially with regard to the type than the particular form, and reduced the factors of deformity to extension, luxation, and torsion, and indicated their participation and isolation in various deformities. He also spoke of the influences which produced the deformities, as modelling pressure and adaptive growth, and indicated that mechanical treatment was limited by the extent to which the same factor could be utilized in rectification. The question of operation was to be decided by the same standard. He exhibited some diagrams which demonstrated the theoretical advantages of the removal of the wedge-shaped pieces of bone, with the careful avoidance of the articular surfaces, from the calcaneum, the internal cuneiform, and the tibia in talipes valgus, and the comparatively great rectification which could be obtained by the excision of very limited wedges. The author dwelt upon the ease and safety with which all portions of the tarsus could be approached through incisions along the margins of the foot, owing to the stratification of the structures forming the sole, and advocated the section of the plantar ligaments by an oblique incision parallel to the tendon of the deroneus longus from the outer side, and the freeing of the cuboid bone by a curved incision from the inner margin of the foot.

Dr. Kelly also exhibited an apparatus which he had invented in 1881, and first demonstrated before the Massachusetts Medical Society in 1884 or 1885, in a discussion on a paper read by Dr. Edward H. Bradford on "New and Original Methods of Treatment of Club-Foot." The appliance consists of a boot with a metal sole-plate, a pair of strong drawers with a "box knee cap," and a number of slight elastic bands. The plate resembled a segment of a saucer from which the steadying rim had been removed. The boot was placed on the flat central portion and had a number of holes along the elevated margin from which the elastic bands passed to the lower band of the box knee-cap. The apparatus utilized the weight of the patient's body as the rectifying force, as at each step a part of the curved portion of the plate coming in contact with the ground, rolled it over until it reached the only part that afforded stability, namely, that upon which the foot rested, and consequently the member was forced into the most advantageous position. The elastic bands were added for the two-fold object of maintaining, during repose, the benefits derived from locomotion, and of exercising lateral torsion on the foot by an easy arrangement of the bands with regard to the plate and the knee-cap. He expressed the belief that the shoe in its present shape would be useful in

the less aggravated forms of talipes equinus and varus, and as an adjunct in the treatment of the more severe examples.

Southern Surgical and Gynecological Association.

Fourth Annual Meeting, held in Richmond, Va., November 10, 11 and 12, 1891.

(*Concluded from page 936.*)

THIRD DAY—AFTERNOON SESSION.

Dr. Paul B. Barringer, of Richmond, Va., read a paper on *Venomous Serpents of the United States and the Treatment of Wounds Inflicted by them.*

Dr. Christopher Tompkins, of Richmond, Va., followed with a paper entitled

A CASE OF INDUCED ABORTION FOR RELIEF OF NAUSEA AND VOMITING, WITH REMARKS.

On August 1, 1885, he was called to see Mrs. J., aged 24, and, as nearly as could be ascertained, three and a half months pregnant with her first child. Patient was born in the mountainous part of Virginia; she had an active outdoor life and grew up to be a woman of good height and of round full figure. January 14, 1884, she was married.

While in the city of New Orleans, in stepping from the platform of a car, she sprained her ankle. This, although treated immediately by a physician of that place and subsequently in this city, caused her great suffering. Finally, refusing to yield to the usual treatment, the part was put in a plaster cast; she went about on crutches, and after many months recovered. In the meantime she became pregnant and from the first was attacked with nausea and vomiting. Mild in the beginning, it gradually increased in gravity, till she sent for him on the 1st of August, 1885.

Her husband stated that she had had fever for two weeks. He found her in bed and learned that she had been there for days; her figure not robust, and her face thin and attenuated. What little she had eaten in the past ten days or two weeks had been apparently rejected, her temperature one degree above normal; tongue foul; sordes on the teeth, and the breath of a sour and bilious odor. The pulse was fairly good, considering her condition. Even the mention of food was distressing to her, and the sound of the dinner bell, though far off from her, caused such distress that its ringing was discontinued by the family. The bowels had throughout her pregnancy been constipated, only moving once in two or three days. Although continuously retching, very little or no blood had been seen in the material vomited, except on two occasions, and then not a great deal, and such as there was was of a florid, scarlet color. No medicine had been given and no treatment taken, except the occasional use of lime water, which she said "did no good."

The patient did not improve up to August the 7th, when Dr. Tomkins, thinking the case one of the greatest gravity, and that the question of abortion could no longer be deferred, invited Drs. J. B. McCaw and Aaron Jeffery to meet him in the afternoon in consultation. All agreed that abortion must be produced, in order to give the patient a last chance for her life, which was done.

REMARKS.—The case is reported principally because it was an unsuccessful one, and because he wished to disabuse the minds of those who are not experienced in such operations of the notion, commonly believed, and often expressed, that the induction of abortion for the nausea and vomiting of pregnancy is in skillful hands an undertaking devoid of danger and necessarily attended by success. In this case, he is of the opinion that death was the result of the protracted ability and enfeebled constitution, due to her long confinement and suffering: First, from the injury to her ankle, from which she had not recovered, when she became pregnant and was attacked by nausea and vomiting, this last continuing till her death. Under such circumstances the outlook was indeed very unfavorable, for to the shock of operation and depression incident to the use of chloroform, there was added fever and protracted prostration, both from injury to the ankle and from want of nutrition, the result of the long existing nausea and vomiting. He had before and since operated on women for the nausea and vomiting of pregnancy and with success, whose apparent condition was much worse than that described in the above case, but without the history of a previous injury or disease.

The prognosis, always unfavorable, ought, when the case is so complicated, to be of the most guarded kind. The practitioner should not, however, hold his hands on this account, for the operation affords the poor sufferer the only opportunity of relief. The author uses metal dilators instead of tents, and completes the operation at one sitting. He is likewise convinced that the least possible chloroform used, the better the result.

Dr. W. E. B. Davis, of Birmingham, Ala., presented a paper entitled

TREATMENT OF GALL STONES, WITH CASES.

He said: "The treatment during the attacks consists in hypodermics of morphine and atropine, with the use of ether and chloroform until the other remedies have had time to take effect. It is usually soothing to place the patient in a hot bath: and large draughts of hot water will relieve the distressing nausea.

After gall-stones have formed, experience does not warrant us in placing confidence in medical treatment for their cure. The sweet oil draughts, as has been abundantly shown, only become saponified, and give rise to stone like masses. Turpentine, chloroform and wild yam are not curative.

Perhaps something may yet be found that, when injected into the bladder, will dissolve the stones. This is especially desirable for stones located in the ducts. It would seem that medical treatment would prevent their formation; but, so far, there is no very good evidence to show that any medicine has this effect.

A stone in the gall bladder produces such a condition as to favor the formation of other stones; and after an operation for the removal of the stone and the relief of the local condition, we have no return of the disease except in a very small per cent. of cases. This is so in those cases in which stones had been forming rapidly before the operation, and would go far to show the importance of the local causes of the disease. Then, in addition to general tonics, iron, phosphate of soda, mineral waters, etc., our dependence must be placed on operative procedures.

In some cases it may be difficult or even impossible to make a diagnosis of gall stones, but it has been said very correctly that the mistake is much oftener made in calling gall-stones something else than of calling something else gall-stones. Paroxysms of epigastric pain, with tenderness over the lower hepatic region, accompanied with bile in the urine, and followed by clay colored stools, and sometimes the passage of stones, are the symptoms on which dependence must be placed. The shoulder pain is rarely present, and jaundice is most frequently absent. It is only when there is obstruction in the hepatic or common duct that this symptom is to be expected; and often the obstruction is so evanescent as not to give rise to sufficient obstruction to produce jaundice.

When there are frequent attacks of biliary colic, it is best to operate and give the patient the benefit of the exploration, and avoid the dangers of a peritonitis. It is not conservatism to delay operation, where there are obstructive symptoms, until the liver has become involved and the patient's blood poisoned. He had seen a number of these neglected cases in which an operation could offer no chance whatever. He reported a case of death from peritontitis following repeated attacks of biliary colic, where there was sufficient warning to save the patient, but her physician would not advise an operation. In some cases, however, there are no symptoms to indicate the presence of a stone, until peritonitis has resulted from ulceration thus induced. During the past month he had operated on such a case at Ashville, Ala., for Dr. D. E. Cason. The patient was a woman 74 years of age, and had never experienced any symptoms of gall-stones.

He recommends cholecystotomy, and opens the bladder and sutures it to the parietes at one operation. He reported a case in which he removed 51 gall-stones from the bladder, one of them being impacted in the cystic duct, and the patient made a perfect recovery.

Cholecystectomy, the removal of the gall bladder, should never be an operation of selection, and only resorted to when cholecystotomy is not possible. Do not stitch the bladder to the parietes and wait for adhesions before opening the viscus, as it is necessary for it to be opened and emptied before the abdominal wound is closed, in order to recognize conditions which will require manipulations within the abdomen as well as within the bladder. Stones impacted in the ducts must be dislodged and pushed into the bladder or duodenum. It may be necessary to break them up with a needle before this is possible. In some cases the duct should be incised and sutured. Where the obstruction in the common duct can not be relieved, cholecysto-enterostomy should be resorted to.

The following officers were elected:

President—Dr. J. McFadden Gaston, Atlanta, Ga.

First Vice-President—Dr. Cornelius Kollock, Cheraw, S. C.

Second Vice-President—Dr. Geo. Ben Johnston, Richmond, Va.

Secretary—Dr. W. E. B. Davis, Birmingham, Ala.

Place of next meeting, Louisville, Kentucky, second Tuesday in November, 1892.

Chairman of Committee of Arrangements—Dr. L. S. McMurtry, Louisville, Ky.

MICROÖRGANISMS IN THE NORMAL HUMAN URETHRA (*Centralblatt für Chirurgie*, No. 44).—Messrs. E. Petit and M. Wasserman communicate the results they have obtained by exact microscopical and bacteriological examination of the human urethra. The observations were made upon four of their colleagues who had never suffered from any form of urethral affection. The observers have discovered five varieties of micrococcus, six of bacillus, two of sarcina, and two of torula cerevisiæ, of which they describe the microscopical and bacteriological peculiarities. Both authors comprehend their principal results in the following propositions:

1. The normal urethra always contains different varieties of microörganisms.

2. The same varieties are never found in different urethræ.

3. In one and the same individual a difference is found in the varieties taken from the anterior and posterior portions of the urethra.

4. None of the microörganisms discovered are under ordinary circumstances pathogenic.

5. The greater number, however, decompose the urine.

6. The pseudo gonococcus of Lustgarten and Mannaberg was never found.

It is not possible by the most careful and elaborate antiseptic washing of the urethra to obtain a perfect condition of antisepsis.—*Provincial Medical Journal.*

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This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, DECEMBER 19, 1891.

DIET IN TYPHOID FEVER.

The dictum of "liquid food in typhoid" has resulted in the use of an exclusive milk diet by many physicians. So much so is this the case, that we think we may truthfully say that the orthodox diet in typhoid, as recognized by the profession as a whole, is one exclusively of milk. The advantages resulting from the use of the milk diet have been noticeably great, and it is customary to ascribe these benefits to the bland character of the food. The liquid character of the milk is particularly insisted upon and it is assumed that solid food would be detrimental because of its solidity.

It seems to be opportune to call into question this mechanical explanation of the results obtained with a milk diet. The diminished risk to perforation which it may afford is insufficient; its lack of irritation upon an inflamed bowel, is too indefinite.

In the first place, milk is only apparently a liquid food. Its coagulation into great masses in the stomach, soon after its ingestion, makes it a solid food, without the advantage of subdivision, which other solid foods would have. Moreover, the use of solid foods in ulcerative conditions of the bowels, other than typhoid, is not held to be dangerous. In dysentery milk is not as well borne as animal broths, and farinaceous foods. Some authorities speak of the disadvantages of milk in the diarrhœa of infancy. Yet, nevertheless, in typhoid fever it has proven the best diet thus far used. If the true reason for its utility be known, the limited milk diet may be extended along proper lines, much to the benefit of the patient. The mechanical reason for its utility is eminently insufficient and unsatisfactory. The reason must therefore be sought in the chemical conditions present.

The stools voided by the typhoid patient may possibly be the result of the action of the microbic cause of the disease in the blood, but it is far more likely that the conditions within the alimentary canal itself, have much to do with their character. The results reported from the use of intestinal antiseptics, by many observers, particularly the sulpho-carbolates as used by WAUGH, indicate strongly that much of the fever, and many of the symptoms produced in typhoid are directly due to the fermentative conditions in the bowel itself. Several years ago RACHFORD[1] made a series of observations on rabbits, designed to elucidate these points. He grew pure cultures of typhoid bacilli, in different culture media, viz.: peptonized milk, peptonized beef, peptonized brain, and bouillon and beef peptonoids. These cultures were introduced into the stomachs of the rabbits.

The rabbits which were fed the beef peptonoid cultures exhibited very pronounced brain symptoms, with elevation of temperature. The brain and beef cultures produced the same effects without elevation of temperature, while the milk cultures produced the mildest type of the affection. RACHFORD'S experiments fully justify his conclusions, viz.: "The physiological and poisonous properties of the ptomaines formed by this bacillus [KOCH–EBERTH] will depend in great part on the character of the food material in which it is growing," and "milk is the best diet in typhoid fever, since the ptomaines produced in it do not cause either fever or nervous symptoms."

Now, then, the true reason for the value of milk in typhoid being known, some clue to the means of supplementing it in the right direction is given. Milk is not a complete nutrient for the adult as it is relatively deficient in carbohydrates, and in febrile processes especially are car-

[1] Medical News, Phila., Vol. LV, p. 453.

bohydrates needed. The poisons which RACHFORD'S experiments show to be active, are all derived from animal food. Poisons capable of producing nervous symptoms or fever can not be formed from carbohydrates, so that objection to these articles of food on this score can not be urged. They might produce flatulence and increase the tympanites. The mechanical objection to carbohydrates, such as bread, rice, and potatoes is surely exaggerated. The incomplete nutritive value of the diet to which typhoid patients are subjected certainly must have a marked effect in prolonging the period of convalescence, and no doubt also reduces the strength of the patients during the attack to such a degree as to permit a fatal issue which a more complete nutrition would have prevented. In the absence of figures we may be allowed to believe that more deaths would result from this incomplete nutrition, than could possibly happen from perforation under a more generous diet.

Again, the occurrence of severe nervous symptoms may even indicate the complete withholding of milk temporarily, for the purpose of assisting in bridging over a serious episode in the course of the disease.

WHAT IS DIPHTHERIA?

By not a few clinicians the dread term diphtheria is limited to cases presenting only the most marked features of the disease. Severe putrid throat, with false membrane and much swelling, general involvement of the neighboring glands, and severe septic symptoms, are for these men, necessary, to constitute a case of diphtheria. In consequence, particularly if they practice outside of the larger cities, where the disease is always more prevalent, they find diphtheria a rare disease.

But diphtheria, like all the infectious diseases, can and does possess a wide range of severity. In its mildest types, the false membrane is usually limited to the tonsils, and in some instances it cannot be certainly distinguished from follicular tonsillitis. Nevertheless these cases are diphtheria, and are quite as capable as more severe cases of becoming foci of infection. The physician in attendance upon such cases is bound to take cognizance of the possibility of infection, that he may take proper precautions if he goes into the lying-in room, or makes a surgical operation. The best proof of the real character of the milder cases is found in the sequelæ which sometimes occur. Paralysis of the throat, essentially a post-diphtheritic condition, occurs after sore throats so mild as not to have required treatment, and only remembered when the physician seeks a cause for the paralysis.

Unfortunately, mild cases at the beginning, do not always remain mild throughout the whole course of the disease. Marked extension of the process, with the occurrence of septic symptoms, may come on at any time, and if such a period be waited for, before the diagnosis of diphtheria is made, the golden opportunity is lost. Now that it has been settled beyond all cavil that the false membrane is the place of formation of the poisons which produce all the symptoms of this disease, it is clear that the time for interference is at the beginning of the trouble, and not after great extension of the membrane has made its destruction almost impossible. Therefore the time for diagnosis is early, and the first appearance of a false membrane in the throat, no matter how slight, no matter how mild, is the time to say "diphtheria," and to act accordingly.

Diphtheria should be defined as a false membrane existing upon a mucous or wound surface. This meaning of the term should hold, whatever be the anatomical location of the membrane, or whether it occur primarily or as a complication in the course of some other disease, as scarlatina or typhoid fever, or whatever be the particular bacterial cause of the appearance of the membrane.

The term diphtheria has recently been attacked from another quarter. WELCH and OSLER of Johns Hopkins propose that the term diphtheria shall be reserved for the conditions produced by the Lœffler bacillus, while other processes in the throat characterized by the formation of false membrane shall be denominated pseudo-diphtheria. It does not appear that their diphtheria and pseudo diphtheria differ from each other, except in their etiology; distinguishing clinical differences are not pointed out. With all due deference to the men making this proposition we respectfully submit that such nomenclature would lead to inextricable confusion. The term diphtheria has already attained a definite clinical significance, and if this significance can not

be made to harmonize with recently discovered etiological factors, the necessary change in nomenclature should be applied to the etiological factors, leaving the old term undisturbed in its original meaning. The term "amœbic dysentery" is a good example of this method of nomenclature.

The difficulty already met, with regard to diphtheria, indicates some of the troubles to be met in classification of diseases, with advancement in etiological information. Theoretically, a scientific classification of diseases can only be made upon an etiological basis, but if the etiological classification can not be made to harmonize with clinical differentiation, it will fail of its object.

With regard to diphtheria we plead for its retention as a purely clinical term, to be employed in the sense already defined, and we further plead that all false membranes in the throat shall be recognized as diphtheritic, and treated accordingly.

HABITUAL ENDORSERS OF NOSTRUMS.

The *Western Druggist*, November, states that the same clergymen and women who gave such rose-colored testimonials to the HUBBARD AYER concoction of cocaine in poor sherry, are now among those who are bolstering up the "gold cure" for inebriates. The same journal makes mention of another and stranger incident regarding this same "cure." A physician has begun a libel suit against the proprietor of the fraud. The former addressed a letter of inquiry about the plan of treatment, and was thunderstruck to find himself enrolled among the drunkards who had been cured. This kind of endorsation of nostrums is one habitually used by the receivers of the letters, although not so intended by their authors. When the people begin to "poke fun at" or ridicule a quackish undertaking, its race must be nearly ended.

TURPENTINE IN POST-PARTUM HÆMORRHAGES.—When ordinary means have failed a piece of linen saturated in turpentine, introduced into the uterine cavity and compressed against its walls, excites contraction of the womb and instant arrest of the bleeding.—*Ex.*

NECROLOGY.

James Watt, M.D.

[Memorial minute respecting our late Fellow, Dr. James Watt, read at the November meeting of the Kings County Medical Association, Brooklyn.]

James Watt, M.D., a member of this Association since 1887, departed this life September 10, 1891, in his forty-eighth year. He was a Scotsman by birth, having had Aberdeen for his natal town. He was born in 1844. When 5 years old he was brought, with other members of his family, to this country, and to this city about two years later. He was here educated, and entered upon the practice of pharmacy as a preliminary to taking his medical degree. He attended lectures at both Bellevue Hospital Medical College and the Long Island College, receiving his diploma from the latter school in 1866, when he was 22 years old. After his graduation he made a visit to Scotland, but did not there undertake additional medical courses, as has been stated, since his stay abroad was only for a short time. He made his home for life in the Southern District, living for the twenty or more years of his professional activity chiefly on Court, Union and Carroll streets. His last abiding place, on the corner of Court and Carroll streets, has been, for that part of the city, one of the best known medical situations for four decades. In 1870, Dr. Watt joined the county organization, and about five years later was chosen Surgeon to the Southern Dispensary. He had a strong predilection for political life, and was measurably successful in his combinations therein. He served one term in the State Assembly, being elected from a district which commonly went against his party, for he was undoubtedly widely known and very popular. He was not so successful when running before the county at large for the position of Coroner. He held appointive positions in the Department of Health, as Registrar of Vital Statistics, and in the Police Department as Surgeon under two changes of administration. He was partial also to the work of the National Guard, which he entered first as Assistant Surgeon of the Thirteenth Regiment, under appointment by Col. Mason. He served in that capacity eight years, when he was promoted Surgeon of the Fifth Brigade, on the staff of Gen. Christensen. As a practitioner Dr. Watt was diligent, earnest and persistent, so that, with much of inherited Scottish grit and thrift in his mental make-up, he won a large measure of success, in the face of not a few obstacles at the outset of his career. He was a member of the Physicians' Mutual Aid Society, and many other social and professional organizations.

R. M. WYCKOFF, M.D.,
T. M. LLOYD, M.D.

Julius Guenther, M.D.

Some philosopher has said that as man comes unconscious into the world, so, next to the life upon which he then enters, the greatest boon that can be granted to him is to be permitted to take leave of that life unconsciously. The friend whose memory we would here perpetuate was thus favored, having, after a lingering disease, passed away quietly and unconsciously, August 17, 1891.

Dr. Julius Guenther was born in Berwalde, Saxony, in 1827. He came to America in 1853, and continued the medical studies which he had previously pursued at the Universities of Leipsic, Halle and Vienna, graduating at the New Orleans School of Medicine in 1857. He first came to this county in 1859, practicing his profession at Coatsburg for two or three years, then returning to New Orleans, where he remained until 1865. The next twelve years were spent partly upon his farm near Coatsburg, and partly in New Orleans. Coming North for the last time in 1877, he settled in Quincy, and has since been among our most active members. As a man, Dr. Guenther was upright, mindful of his duties as a citizen, and a model in all his domestic relations. As a physician, he was skilful, conscientious and untiring, always a student, loving his profession, zealous for its advancement and jealous of its dignity.

In token of its appreciation of the worth of its late President, Dr. Julius Guenther, in all these relations, in recognition of the loss it has sustained, and with profound sympathy for the bereaved kindred whose loss is still greater, the Adams County Medical Society places this memorial minute upon its records.

CHARLES W. ROOK, M.D., Sec.

uincy, Ill.

B. S. WOODWORTH, A.M., M.D., died September 10, 1891, at the age of 72 years and 7 months. For over fifty years he had been actively engaged in the practice of medicine in Fort Wayne, Ind., and for all these years had been standing at the head of the profession as a highly cultured, conscientious physician. In fact, he was far above the average of his day, both in literary and medical attainments, and was a most valuable man in the community. That he was tenderly beloved by his professional brethren was demonstrated on the day of his funeral, when all in the city were present. The citizens, in fact the entire city, mourned when his death was announced; how could it be otherwise, a beloved physician, in whom all had confidence, had died. He had been honored by being elected President of the Indiana State Medical Society, and at various times had been President of the County Medical Society.

No physician was ever more highly honored and respected by all classes of citizens and the profession than Dr. Woodworth, and his memory will be cherished for many years.

LEVI IVES, M.D., formerly a member of this Association, departed this life at his home in New Haven, Conn, November 29. He was a native of that city, born there in July, 1816. His father, Dr. Eli Ives, was President of the Association in 1860, and forty years a professor in Yale. Dr. Levi Ives obtained his medical education under his father, and at Bellevue Hospital, New York. The high hereditary name of his family in medicine was honorably sustained by him for nearly half a century, but only as a practitioner and not as a teacher, as several of his kindred have been. He was a consultant physician to the City Hospital, and prominent in his local scientific associations. His son, Dr. Robert Shoemaker Ives, succeeds him upon the staff of the New Haven Hospital. His final illness is ascribed to chronic renal disease.

THE ACTION OF TUBERCULIN UPON THE EXPERIMENTAL EYE TUBERCULOSIS OF THE RABBIT.

Report from the Institute for Infectious Diseases in Berlin.

BY PROF. W. DOENITZ.

Contrary to the negative results of Baumgarten, the author said, in his report before the Society of Charité physicians, that he is now in a position to demonstrate healed tubercular processes accomplished with tuberculin, and which have been heretofore considered as impossible. The author then demonstrated, in the eyes of a number of rabbits, tubercular processes established by inoculation, both with pure cultures and with tubercular tissues, in various stages, from that of the first irritative reaction, occurring about the middle of the third week, to that of the complete cure, the latter resulting in from three to four months, the eye retaining its function as a visual organ.

In the early part of the treatment with tuberculin, the tubercular process is hastened, cloudiness of the cornea and pannus developing rapidly, whereas in the eye of the control animal, the process is slower, with, however, early necrotic processes at the seat of puncture and rapid perforation, this necrosis not occurring when tuberculin in gradually increasing doses was administered. It is immaterial whether the treatment is begun immediately after inoculation, or at a time when true tubercle had been formed. The administration of the product obtained by Klebs from Koch's tuberculin was attended with only temporary improvement; the eyes were eventually lost. The same dose of the unmodified tuberculin, and continued without increase, also failed to produce good results.

The conclusions are:

1. The tuberculin is a sure curative agent for the experimental tuberculosis of the eye of the rabbit.

2. The tuberculin shows its curative effect only after true tubercle can be demonstrated.

3. The first effect of the tuberculin is a transient but severe irritation of the eye.

4. Under the continuous action of the tuberculin, all irritation in the eye subsides.

5. When, before beginning of the treatment, deep-reaching destructive processes have not occurred, the cure results in retention of the visual functions of the eye, otherwise, atrophy results.

6. To a cure it is necessary that the tuberculin be given in increasing doses, and the continued maintenance of a not too slight reaction is essential.—*Deutsche Medicinische Wochenschrift*, November 19, 1891.

BOOK REVIEWS.

HUMAN MONSTROSITIES. By BARTON COOKE HIRST, M.D., Professor of Obstetrics in the University of Pennsylvania, and GEORGE A. PIERSOL, M.D., Professor of Histology and Embryology in the University of Pennsylvania, Philadelphia. Large folio, 13 x 17 inches. In four parts, to contain about 150 pages of text, with 39 full-pages photographic plates from nature, and many engravings. Price per Part, $5. Limited Subscription Edition. Part I, pages 1–88, Plates i–vii. Philadelphia: Lea Brothers & Co., 1891.

This work is one of the most interesting and artistic contributions to the science of medicine which we have ever seen. It treats of a subject upon which very little of a systematic character has been written. The science of teratology is more than a novelty to the scientific physician. A knowledge of it is of great practical importance to the general practitioner, and to the obstetrician is a *sine qua non*. It would seem that no treatise upon human anatomy could be complete without a more or less comprehensive and systematic discussion of this highly interesting and scientific subject, yet where can we find an anatomy which devotes any attention to this subject, or, at least, which devotes space enough to enable the practitioner to acquire even a fair understanding of the various monstrosities which the human species is prone to develop. As far as English literature is concerned, this is the only work which has so far appeared which is at all systematic or scientifically comprehensive. The works of Förster, Ahlfeld, and particularly that of Geoffroy Saint Hilaire are classics upon this subject, but unfortunately are inaccessible in the original to English speaking and English reading physicians.

In preparing the material for the work before us, the authors did not find it necessary to draw upon European material to any extent. The Wistar and Horner Museum of the Pennsylvania University contains a very valuable and varied collection of human monstrosities, some of the specimens being exceedingly rare.

The illustrations in Hirst and Piersol's work are faithful photographic reproductions of the original, and from an artistic standpoint can hardly be excelled. The type is clear and beautiful, the text comprehensively descriptive, and free from verbosity. The authors have not attempted profuse padding, and their language has sufficient rhetorical elegance to render its perusal pleasurable. We shall await with considerable interest the appearance of Part II.

THE ENCYCLOPŒDIC MEDICAL DICTIONARY. By FRANK P. FOSTER, M.D. Part viii, Gym–Jab. Pp. 1793–2040. New York: 1891.

This installment of Dr. Foster's great work completes the second third of its promised issue. True to the history of every work of reference that was ever undertaken, this book becomes more and more incompressible as it progresses, and we begin to wonder how the editor will be able to stow away the remaining two-thirds of the alphabet in the four parts yet to issue.

The reputation for scholarship and learning—two different commodities, by the way—earned by the compilers of the earlier parts, is abundantly sustained by the issue just received. We have had occasion to consult the words *hernia*, *hyoscine*, *iridectomy*, *hæmatin*, *jaborandi* and *hospitalism* and the definitions found under them have satisfied us that they are based on "independent reading." The collateral sciences have not been neglected, but they appear to occupy less space than in the earlier parts; as for example, *hygometer* and its congeners occupy but sixteen lines, while *barometer* was allowed nearly two pages, inclusive of its illustrations. The temptation to shorten up in the use of illustrations, will be inevitable as the page-space dwindles, but these woodcuts, unless they are very good, are out of keeping with the fine text that is provided. The subscribers will not feel any disappointment if only the best ones are inserted. It is almost unnecessary to add that the value of the work increases in almost a geometrical ratio as the later parts come along. Now is a good time for those who have a prepossession against taking books by subscription to break away from prejudice, and take unto themselves a book which has more of usefulness in it than any completed medical dictionary they can procure.

SELECTIONS.

THE BICHLORIDE OF GOLD TREATMENT FOR INEBRIETY.—The attitude of the medical press toward the Keely treatment is very properly that of agnosticism. The general opinion seems to be that the Keely cure will go the way of many other much vaunted specifics, and after the reaction from the stimulating effect of faith will ultimately come the disappointment of relapse.

The so-called cure has brought to public attention the attitude of the medical profession towards doctors who keep secret discoveries made by themselves, or secure patents on such, or otherwise seek to make their discoveries a source of exclusive profit to themselves.

The doctors call this quackery and refuse to have relations with men who practice it, and for this many persons regard the profession as narrow-minded.

But the doctors are right. It is not in their own but in humanity's interest that they hold each other to this rule of ethics. It is the doctrine of the profession—as old as Galen—that the first duty of the doctor is to hu-

manity, that his learning and his skill belong to mankind, not to himself. Hence it is held to be his obligation to give to the profession, for humanity's benefit, whatever discovery or device he may make tending to the saving of life or the mitigation of suffering.

To this, moreover, every physician upon graduation makes oath of allegiance, so that the doctor who violates the ethical rule disregards his own oath. Even the pretension of such an one as to his discovery must be taken as that of a man unworthy of confidence.

The rule is a generous, not a narrow-minded one. It has its source in a high and unselfish conception of duty, and its rigid enforcement is a matter of true morality as well as professional ethics.—*Medical Age.*

AN APPARATUS for the production of local anæsthesia in the mouth, pharyngeal and other cavities, has been brought out by Weisendanger, at Hamburg. This consists of a double tube well protected by a horn or gum-elastic handpiece so as to prevent the warmth of the hand interfering with the production of the cold. Through the inner tube compressed carbonic acid or ammonia is introduced into a small leather bag, in which it expands, producing intense cold, and escaping therefrom by means of the outer tube. Attached to the handpiece above mentioned is an additional sheath which protects the tube from the mucous membrane of the cavity at the depth of which it may have to be applied.

IDENTITY OF THE BACILLUS OF EBERTH AND THE BACILLUS COLI.—At the *Academie de Medecine*, Messrs. Rodet and Roux, of Lyons, communicated the results of their examination of the bacillus of Eberth and the bacillus coli. The conclusion to which they came was that these two bacilli were in reality one and the same microbe, presenting itself in various forms according to the conditions of the organisms in which it was developed.

POST-MORTEM APPEARANCES IN THE BRAIN AND INTERNAL EAR IN A CASE OF PERNICIOUS ANÆMIA (*Annales des Maladies de l'Oreille*).—J. Habermann contributed a communication giving the appearances which he found *post-mortem* in the brain and the internal ear in a case of pernicious anæmia in which a prominent symptom had been vertigo with deafness. There were hæmorrhages of the meninges and brain substance, also extensive hæmorrhages in the semi circular canals. The hæmorrhages were all due to diapedesis rather than ectasis. The author hesitates as to which lesion to attribute the vertigo.

THE SUCCESSOR TO PROFESSOR CARL BRAUN has been elected in the person of Dr. Friedrich Schauta, of the University of Prague, the author of the "Manual of Operative Midwifery" and numerous lesser works. He will occupy the chair of midwifery and conduct the first obstetrical and gynecological clinique.

ARTIFICIAL CORNEA.—The *Berlin. Klin. Wochenschrift* publishes a seventh case of transplantation of cornea by Professor V. Hippel, of Königsberg. Cocaine applied, the non-transparent part of the cornea, down to the membrane of Descemet, was cut by a little trephine and carefully removed. By the same means a similar piece was excised from the whole thickness of the cornea in a young rabbit, and transplanted to the eye of the patient. It filled the wound, and was on a level with the rest of the cornea. Iodoform was applied, and both eyes were bandaged. In six weeks the patient was discharged with a completely transparent cornea.—*Medical Age.*

CAMPHOR menthol will be found efficacious in pruritic and herpetic and eczematous eruptions. It promptly allays local irritation, contracts the capillary vessels and exsanguinates the part.

WHEN IS A SEA VOYAGE APPROPRIATE?—*The Sanitarian* offers the following advice on the subject:

Never send a patient to sea who is compelled to live on a limited diet, unless he can take the requisite food along with him, a ship being the poorest place in the world where to obtain any special article of diet. More ground will be lost by patients under such circumstances, in one week, than can possibly be regained in many months following, on shore, even under the most favorable conditions. There cannot be the slightest doubt in the world that a sea voyage may be, and is, beneficial in a great majority of chronic cases, but it should be a voyage chosen for its especial adaptability to the case in question, and the climate, class of steamers, food, etc., should have the careful consideration of the family physician before he sends his patient on a month's voyage by water, for a lack of information on the physician's part may mean no improvement to the patient, and may mean death, whereas positive knowledge would insure improvement.

MISCELLANY.

DR. PAUL F. MUNDÉ has retired from the editorial control of the *American Journal of Obstetrics*. Dr. Brooks H. Wells is his successor.

CHICAGO MEDICAL SOCIETY, D. R. BROWER, M.D., President.—A regular meeting will be held at Washington Hall, 70 Adams street, on Monday, December 21, 1891, at 8 o'clock P.M. Papers will be read as follows:

1. "Medical Diagnosis of Diseases of the Stomach," by Dr. J. B. Herrick.
2. "Medical Treatment of the Diseases of the Stomac' and Duodenum," by Dr. Frank Billings.
3. "Surgical Diagnosis of the Diseases of the Stomach,' by Dr. Weller Van Hook.
4. "Surgical Treatment of the Diseases of the Stomach," by Dr. Nicholas Senn.

The discussion will be opened by Drs. N. S. Davis and Ludwig Hektoen.

JUNIUS C. HOAG,
Secretary.

Official List of Changes in the Stations and Duties of Officers Servi in the Medical Department, U. S. Army, from December 5, 189 to December 11, 1891.

Capt. Arthur W. Taylor, Asst. Surgeon U. S. A., having been foun incapacitated for active service, is granted leave of absence unt further orders, on account of disability.

First Lieut. Paul Shillock, Asst. Surgeon U. S. A., is granted lea of absence for fifteen days.

Capt. William E. Hopkins, Asst. Surgeon U. S. A., resignation has been accepted by the President, to take effect April 5, 1892, an granted leave of absence to include that date.

Major Passmore Middleton, Surgeon U. S. A., having been fo incapacitated for active service, by reason of disability incid to the service, is, by direction of the President, retired from tive service.

Capt. Walter W. R. Fisher, Asst. Surgeon relieved from duty at Assiniboine, Mont., and ordered to Ft. Columbus, New York H bor, for duty at that station.

First Lieut. Charles E. Woodruff, Asst. Surgeon, is relieved fro duty at Ft. Missoula, Mont., and ordered to Ft. Assiniboin Mont., for duty at that station.

First Lieut. James D Glennan, Asst. Surgeon, granted leave of ab sence for one month, with permission to apply for one month's extension.

Capt. Henry G. Burton, Asst. Surgeon, ordered to report to th President of the Army Retiring Board, at Los Angeles, Cal. examination by the Board. On conclusion of his examinatio will return to his station, San Diego Bks., Cal.

Major Julius H. Patzki, Surgeon U. S. A., will report in person t the President of the Army Retiring Board, at Ft. Leavenworth, Kan., for examination by the Board. By direction of the President.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending December 12, 1891.

Asst. Surgeon Lewis Morris, detached from the Navy Yard, Leag Island, and to the receiving ship "St. Louis," at that Yard.

Asst. Surgeon H. N. T. Harris, detached from the receiving s "St. Louis," and to the Navy Yard, League Island, Pa.